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DEVELOPMENT AND DEMONSTRATION OF THE EFFECTIVENESS OF USING PROGRAMED MATERIAL FOR TEACHING FUNDAMENTAL TOOLS AND TECHNIQUES REQUIRED FOR ENGLISH COMPOSITION AT THE UNIVERSITY LEVEL. FINAL REPORT.

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THIS STUDY WAS SET UP TO DETERMINE THE EFFECTIVENESS OF USING PROGRAMED MATERIAL IN SPELLING, DICTION, AND SENTENCE ARRANGEMENT AND PARAGRAPH COHERENCE FOR (1) IMPROVEMENT IN THE LANGUAGE HABITS OF THREE TYPES OF STUDENTS AT COLORADO STATE UNIVERSITY AND (2) ECONOMY IN TIME AND PERSONNEL REQUIRED FOR INSTRUCTION OF THESE STUDENTS. ONE EXPERIMENTAL UNIT WAS CONSTRUCTED FOR THE AREA TO BE STUDIED. ALTHOUGH DEVELOPMENTAL OBJECTIVES WERE ATTAINED, IT WAS CONCLUDED THAT MOTIVATION IS MORE IMPORTANT THAN METHOD. (LP)

ED003711

DEVELOPMENT AND DEMONSTRATION OF THE EFFECTIVENESS OF USING PROGRAMED MATERIAL FOR TEACHING FUNDAMENTAL TOOLS AND TECHNIQUES REQUIRED FOR ENGLISH COMPOSITION AT THE UNIVERSITY LEVEL

FINAL REPORT

Cooperative Research Project No. S-192

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
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Martha Scott Trimble
Colorado State University

1964-1965

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CHAPTER I

INTRODUCTION

Since the founding of Colorado State University as The State Agricultural College in 1879, a basic course in English has been offered in the curriculum for students in need of review in grammar, drill in spelling and punctuation, and practice in construction and organization of simple written units. The project director first became acquainted with the course in 1940, when emphasis was being placed upon remedial reading, and again in 1961 and 1962, when emphasis had shifted to "Business" English and English "Fundamentals." Although the history of this basic course at Colorado State University crystallized the need for Project S-192, the scope of the research is national as well as local, encompassing both content and method. The need for improved English habits on the part of students and young adults is acclaimed by academicians, by leaders in business and industry, and by the nation at large. Project S-192 was undertaken as a means of finding an effective method to assist those students whose verbal aptitude is low because they do not know how to communicate, for those for whom the very word English is a source of frustration and embarrassment, and for those who are advised to seek tutorial, refresher, or remedial assistance in English.

A brief history of the basic English course at Colorado State University gives the primary background for the experimentation. One can trace the detailed evolution of the course by studying the catalogs of Colorado State University and its variant institutional names. English Analysis (1879-1901) and Lessons in English (1901-1908) were first required of pre-freshman students at The State Agricultural College; after pre- and sub-freshman curricula were dropped, the course became Grammar (1908-1912)---"prerequisite for Freshman English" and "required of General Science seniors." The course persisted, except for minor changes in number, title, description and credit offered until, in 1917-1918, English 310A was described as a

> rapid review of the essentials of high school English with special emphasis upon grammar, punctuation, spelling and sentence structure. Required of all freshmen who are not prepared to take English 311. (Catalog, 1917-1918)

Except for variations in wording, the course continued as E 1--fondly known by students as "dumbbell English" (1938), E 8--Business English (1957), and E 8--English Fundamentals (1962). The course description stands in the catalog today as

> E 8 English Fundamentals I, II, III, 3 (3-0)
>
> Rigorous practice in spelling, punctuation, grammar, and diction, intended to establish strong habits of correct usage, with emphasis on traditional and prescriptive standards. Practice in reading skills. Recommended for secretarial students. (Biennial Catalog, 1964-65, 1965-66)

The wording is virtually the same as for the course offered fifty years ago, though the course is not a required prerequisite for poorly-prepared freshmen.

Further background for the experiment is the great disparity on university campuses in the amount or kind of refresher, review, or drill which should be offered or whether, even, such a course should not be removed from the curriculum. As Michigan University lowers its requirements for freshman composition, Stanford University enrolls 5, 000 students in refresher classes. A glance at current university and college catalogs shows that institutions from Ohio to Oklahoma and from Massachusetts to Oregon recognize the value of a course similar to the one at Colorado State University.

There continues to be recognition of a need for the course at CSU. First, instructors of the basic E 2 English composition classes must presume certain basic standards from incoming freshmen, forgoing comprehensive review with individual students who cannot meet class standards in the fundamentals of the language; there is insufficient time during a quarter for simple review of "eighth-grade English" or "the language the average student knows when he is five." At present, in CSU E 2 courses, theme errors of so simple a nature as to warrant drill on any one part of the first twenty-eight sections of the Harbrace Handbook, standard handbook required at CSU, are marked with an X. With a total of five X's, the theme itself is an X theme, not read, not graded. The average or B student can interpret the X, find the error, read Harbrace and make his own correction. The low-C, D, and F students, however--- confronted with a theme of X's and knowing very little about pronouns, agreement, reference, tense, diction, punctuation or spelling--- foresee frustration, futility, and failure. As one E 8 student said, "The only thing we can do is run up and down the dorm halls, trying to find someone who will help us pick out the errors and show us how to correct them." Dormitory tutors and graduate assistants in English help students in regular study sessions in the dorms, but this type of student needs far more personal, more constant drill of the sort that can be afforded by reinforcement in programed texts.

Second, senior students who do not pass the English Proficiency Examination need review in English. Since the inception of the EPE during the 1960-1961 term, authorized by the Faculty Council at the suggestion of the College of Engineering and required of all seniors graduating after August, 1962, almost a fifth of the seniors taking the examination for the first time fail. The test has been of two parts: objective and essay. The American College Testing forms, as well as tests prepared by staff members, have been used for the objective part. The essay, on one of a number of given topics, is written in a 90-minute proctored period, with only a dictionary for reference. The essay is read by three members of the EPE Committee, all English staff members, although original plans called for an inter-departmental or inter-college committee of readers. Students who fail the Proficiency may re-take the test an unlimited number of times, but recommendation is made for turorial assistance or refresher course.

Colorado State University, then, still recognizes a need for a basic course in what is now termed English Fundamentals.

A living language like English is always in a state of flux, as is any course designed to teach it; but the flood-gates are down with the increase in verbal media like radio and television. The lecturer of the chautauqua circuit has been replaced by anyone who has something to say, however literate or illiterate he may be in his presentation. A marked tendency among educated men not to stress form or drill in language habits but to encourage creativity and original thinking results today in nothing's being correct or incorrect, merely standard or substandard, with few willing to assume leadership as to who determines the standard. For too long eighth-grade English has been the one last stronghold for teaching form in the language, the high schools tending to stress the teaching of literature instead of the teaching of composition or grammar. When the universities began to put the burden of proof upon the incoming undergraduate to know the "basics" in order to advance to high forms of thought and more intellectual expression, English as a required remedial course was, from ten to twenty years ago, removed from the curriculum on most campuses.

Another direction of the flux in English---indeed a complete diversion of the riverbed---is in the very meaning of grammar. Today the structural linguist and the transformationalist seek to let the student discover for himself the structure of the language. Grammar, as it was once known, has not had an important place in the secondary school for a great number of years. As the schools begin accepting the structural approach, the traditional will tend to be discarded altogether; meanwhile there will be a long transitional period. The New Grammar of the descriptive grammarians attempts to do for English what the New Math has done for the mathematics courses. It is quite possible that the New Grammar will be the panacea which all who teach English seek; it is also quite possible that there will continue to be students who have no feel for the language and are unable to use English with any degree of proficiency.

As a result of the currents and eddies in English in the Space Age, two paradoxes are apparent: 1) At a time when the need is great for lucid, direct prose and less gobbledygook, jargon, commercialese, or acadamese, the universities are advocating reduction in requirements in freshman composition. 2) As linguists and new grammarians are changing concepts and terminologies and placing emphasis upon descriptive rather than prescriptive grammar, employers and major professors alike are asking why young people are not prepared to spell, to choose words with care, and to write clear, coherent and effective sentences and paragraphs. Linguists, English professors, English language associations, the United States government, and private foundations have teamed together to arrest the situation. There are thousands of young people in the nation's schools, colleges, and universities who need a simplified approach to what the language is, what it does, and how it can be used effectively.

There have been, as there will continue to be, widely divergent opinions about not only what English is but how it should be taught. Any comprehensive summary of methods suggested for or tested in English classrooms would be too long for inclusion here. Recognition, however, that using the English language IS behavior points up the value of the new methods of the behavioral psychologists. Operant and discrimination learning, reinforcement, and retention in the programed technique of B. F. Skinner are finding their place in English teaching. Programed texts in language skills permit students to work independently at their own rate on individual areas of difficulty.

That for almost a century a course has been offered to meet the needs of certain types of students led the project director to borrow from behavioralists to seek a new means of either revitalizing an old course or of providing auto-instructional substitution for its elimination as a course. From Dewey and Jespersen to Conant and Chomsky and Skinner is a long road; there will undoubtedly continue to be students who do not meet set requirements in English or who need special assistance, whatever the concept of English of the day. What method can best help these students is a challenge to anyone who considers himself naive enough to have the answer. If a programed text should provide self-help as effectively as a course within the curriculum, a basic course such as the one that has persisted in one form or another at Colorado State University could be removed from the curriculum.

The motivation for the research was thus clarified toward an approach to a national problem from a personal interest in a local situation. The Department of English cooperated in every aspect of the project, giving the project director full and complete authority and control of the E 8 program during the 1964-1965 academic year. Receiving assistance from the U. S. Office of Education and working under the auspices of the Department of English at Colorado State University, the project director developed three programed units in English, demonstrated the use of these texts in E 8 sections at CSU during the fall, winter, and spring quarters and herewith presents the final report.

CHAPTER II

RESEARCH PROBLEM

The problem on which the research was focused, localized from a general inarticulation on the part of high school students, college and university graduates, and the public as a whole, is basically one of behavior. The behavioral pattern of certain types of university students who cannot communicate clearly or effectively in their classes at Colorado State University provided an environment in which to determine to what extent content and method could best be combined to help these students gain a proficiency in written English. Emphasis today being placed upon the fact that the child of five knows his language tends to overlook the fact that the child of five, and frequently the man of twenty-five or forty-five, however well he uses spoken English, has had little practice and too often little training in how to write. The late President Kennedy, for example, with his fine articulation and his inherent awareness of good prose, frequently admonished Washington officials and departmental staff members to "write in English." Although there is no substitute for practice in writing, drill in using the tools and techniques of the language is requisite to changing language habits and improving writing.

The laissez-faire attitude of elementary and secondary schools in regard to written English---practice in composition---followed by rigid requirements of the departments of English and other departments in the nation's institutions of higher learning creates a hiatus in the smooth transition from high school to university for many young people. To discover that he must pass English Composition, that he must answer essay questions intelligently in many of his courses, and that he must write reports and term papers to meet the high demands of his university professors can either motivate or destroy a freshman. The paradox is that as he has been permitted to write without too much attention being paid to spelling, diction, or effective writing, he has been graduated from his secondary school and encouraged, by the demands of the economy, by scholarships from national foundations and the universities themselves, and by parental nudging, to continue his education, only to find that he is inadequately prepared. To have a boy from an outstanding metropolitan high school burst into tears because "his high school cheated him" in not teaching him grammar or offering him enough practice in writing to do university work makes one wonder if there is not some validity to his criticism. To label a student "an underachiever" is unjust when his lack of communication determines his whole range of achievement. The subject of this report, however, is not the inadequate preparation of students but the summation of an attempt to assist those who find themselves thus inadequately prepared.

Colorado State University was chosen as the locale for experimentation. As the institution increases in size, enrollment in E 8 tends to remain static although it should be kept in mind that not all students who need additional help in English enroll in E 8. Campus population has increased as shown below* for five selected years, by college and total:

---

*Figures were made available by the Office of Admissions, CSU. Graduate and unclassified students are included in totals. Figures are for fall-quarter registration for each year.

	Agriculture	Engineering	Forestry & RM	Home Econ.	Sci. & Arts	Vet. Med.	Total
1956	914	732	545	506	1818	327	4996
1961	675	749	507	470	3673	351	6529
1962	706	830	579	491	4151	415	7304
1963	686	934	657	554	5039	434	8460
1964	692	1027	778	651	6411	479	10185

The E 8 enrollment for 1964 shows a rough percentage of two per cent for the Colleges of Engineering, Forestry, and Veterinary Medicine; three per cent for Home Economics; three and a half per cent for Science and Arts; and four and a half per cent for Agriculture. The question of whether so few students need be saved led only incidentally to the research.

The class chosen for experimentation was E 8, not primarily a refresher course, required of or highly recommended for only secretarial students and English minors. E 8 has become, however, a catchall for anyone in need of review, drill, and firsthand acquaintance with certain basic areas of the English language. If the class could lend itself to auto-instructional, self-paced instruction, more students could be served with less class time and fewer instructors required toward eventual elimination of the course. If a completely programed text covering all areas of the course description could be used as effectively as more conventional methods of instruction, such a text could be recommended for students at such time as greater demands should be placed upon the individual student to correct his own weaknesses. Success with the experiment could lead to wider adaptation

of the materials at sub-freshman or secondary levels; by business, commercial, and industrial training centers; or in programs under the Manpower Development and Training Act for basic adult education in multi-occupation.

The course E 8 is an elective for anyone who needs an intensive review of English fundamentals as defined in the current catalog. (p. 3) The real motivation for the project was the problem encountered by the project director in trying to provide adequate instruction for three types of students who enroll each quarter: 1) English minors and secretarial students, 2) juniors and seniors who are required to pass the English Proficiency Examination before graduation, and 3) freshmen and sophomores who wish to prepare for or who have had difficulty in the regular E-series courses in English Composition--E 2, 3, 4.

The students who enroll in E 8 seek proficiency in the areas of spelling, diction, standard grammatical usage, punctuation, sentence sense and construction, and sentence arrangement and coherence in the paragraph as aids toward total written communication. The demands of the class are great; the heterogeneity of the class composition at once imposes upon an instructor the responsibility of providing, for English minors and secretarial students, a quick refresher, acquaintance with new concepts, methods and techniques in English, and mastery of certain areas of weakness; for juniors and seniors, a thorough, intensive review of all areas of English usage (primarily traditional for that is the approach by which they have been trained); and for freshmen and sophomores, a

capsule drill of twelve years of English (transition here from traditional to structural will be increasingly more inclusive) to refresh their memories or acquaint them for the first time with the mechanics of a language, which for all intents and purposes they do not know, in order to pass the required English composition courses and to write meaningful answers to essay questions in other subjects.

Because the areas of mastery are individual rather than composite in nature and because the backgrounds and aptitudes of the class members are widely disparate, the project director, during the academic term of 1963-1964, conducted an experiment to determine the feasibility of substituting the programed text English 3200 by J. C. Blumenthal for conventional texts and methods. Results prompted the current project to develop and demonstrate the effectiveness of adding three programed units (one in spelling, one in diction, and a third in sentence arrangement and coherence in the paragraph) to supplement English 3200, which, traditional in approach, is primarily drill in grammar and punctuation.

Proposed, and granted as Project S-192, was the current experiment herein detailed: DEMONSTRATION AND DEVELOPMENT OF THE EFFECTIVENESS OF USING PROGRAMED MATERIAL FOR TEACHING THE FUNDAMENTAL TOOLS AND TECHNIQUES REQUIRED FOR ENGLISH COMPOSITION AT THE UNIVERSITY LEVEL. Believing that programed instruction would be an efficient teaching medium for the objective skills of the mechanics of the language and believing, also, that new materials beyond any acceptably available in 1963 could be developed and economically and effectively used by students who lack proficiency in written communication, the project director established her thesis that the newly developed programed materials would be as effective as conventional methods to benefit three types of students at Colorado State University: 1) students who, graduated from accredited high schools and admitted to the University, cannot write sufficiently well to meet the standards set for the average freshman English composition class; 2) students who, having completed their freshman English either at CSU or at another institution, have difficulty in answering essay questions or otherwise demonstrate deficiency in written communication; and 3) students who desire a refresher in fundamental drill and practice in English before entering either the secretarial or teaching fields.

Recognition of the demands of a course which is necessary though highly suspect as a reputable course in a university department of English determined the course of the experiment. Student weaknesses determined the content, and expediency determined the method employed.

CHAPTER III

OBJECTIVES AND HYPOTHESES

Project S-192 was undertaken to determine the effectiveness of using programed material in spelling, diction, and sentence arrangement and coherence in the paragraph for 1) improvement in the language habits of three types of students at Colorado State University and 2) economy in time and personnel required for instruction of these students. The objectives thus clearly established, effort was directed toward achieving specific performance in E 8 experimental classes comparable with performance in control classes, by providing new materials developed by the project director.

The objectives were less simple than at first they appeared, with project- and course-necessitated objectives formulating as the experiment progressed. In the first place, the proposal entailed two phases, development of new materials and demonstration of these materials in the experimental classes. Each phase imposed new objectives. Developmental phase sub-objectives were:

1) to program a unit in spelling
2) to program a unit in diction
3) to program a unit in sentence arrangement and coherence in the paragraph

In the written proposal, these three objectives were uncompounded; the element of time, however, intensified complexities of how to program the units and have them in the hands of the experimental class in time for any significant results. Three new objectives were then outlined:

1) to have the spelling unit in the hands of the experimental class during fall quarter.

2) to have the diction unit available for use (with the first unit) by experimental students winter quarter, and

3) to have the sentence-to paragraph unit available by the beginning of spring quarter so that spring quarter experimental classes could use all three of the newly-developed units.

The demonstration phase of the project necessitated five objectives:

1) to obtain a verbal aptitude score from each student for use as a predictor variable

2) to administer pre-tests (ACT, spelling, diction) at the first of each quarter

3) to administer final or post-tests (ACT, spelling, diction) at the end of each quarter

4) to administer aptitude scales during the quarter

5) to determine the variables which could affect results of the experiment.

The third or analytical phase of the experiment, which followed developmental and demonstrational phases, was determinate.

In the second place, the first objective dealt with both content and method. Content for the course being established by the general outline of the class and the method being planned as programing (bit information fed to achieve terminal behavior), new objectives (to be dealt with more fully in Chapter V) evolved from determining the amount of feeding to give university-level students.

The second objective was concerned with method only to determine whether more students working on auto-instructional materials with a minimum of class instruction could effect a saving in time and personnel required for the course.

Although null hypotheses are favored in any kind of psychologocal experiment, a personal element tended to influence formulation of the hypotheses since the materials were being developed for a familiar locale. The postulates were that E 8 classes, as they have proved to be in the past, are essentially the same in composition and that achievement of such classes, at best, is limited.

The hypotheses were

1) that programed units in tools and techniques of English fundamentals could be used as effectively in teaching E 8 classes as more conventional methods.

2) that economy in time and personnel required to instruct E 8 classes would be effected.

Implicit in this statement of objectives and hypotheses lies the potential for programed units, if proved effective, to lead to eventual elimination of E 8 from the curriculum at Colorado State University and to be used by adults in need of self-help in English.

CHAPTER IV

RELATED RESEARCH

Attendant upon the current study are two distinct areas of scholarship and research: 1) revolutionary changes in the concept of subject matter to be taught as "English" and 2) the relatively new and highly controversial programed method of instruction. No attempt has been made to include here a comprehensive survey of the literature of both fields; discussion is limited to only the most recent studies and recommendations. For the purposes of this report, related research is divided into the two areas of content and method, with emphasis for the latter upon programed experimentation in language skills at the university level.

Subject matter presented in E 8, the experimental class, is traditional and prescriptive since it is largely a review of what students should have learned earlier. During the 1964-1965 year none of the class members had had a descriptive or generative grammer in high school; in fact, most of the enrollees in E 8 usually have had little or no grammar. As more and more students are introduced to new concepts in understanding the structure of the English language and use their new knowledge as a guide for better communication, alternatives impend: either 1) the new approach will in itself eliminate any need for refresher or drill at the college or university level, or 2) students who continue deficient in basic skills and usage will need more emphasis upon descriptive or generative grammar and less upon traditional, except for traditional terms and paradigms extracted by the grammarian-scientists, intercalated into the new grammar and presumed as knowledge common to all. That university seniors know neither the meaning nor the use of modification, coordiniation, transition, predication, or complementation, or even the distinction between a preposition and a pronoun implies that any transition in teaching English in the elementary and secondary school is apt in the future to demand a new sort of review or refresher with concentration on the best of both prescriptive and descriptive English. The subject of this report is related only to those areas of the language---spelling, diction, and sentence arrangement and coherence in the paragraph---developed and demonstrated in Project S-192 although further experimentation is anticipated in the area of usage and testing. The reader is referred, however, to the theories, interpretations and texts of the new grammarians. (Chomsky, 1957) (Sledd, 1959)(Fries, 1952, 1963)(Roberts, 1954, 1958, 1962, 1964)(Rogovin, 1964)

Summary of recent research, study, and recommendations pertaining to spelling, diction, and sentence arrangement and coherence in the paragraph is presented under appropriate headings below. Recent experimentation and new texts of note are given at the end of each subdivision.

SPELLING

Of all men who have tried, in the last two hundred years, to conform or reform orthography or spelling, two stand out: Samuel Johnson and Noah Webster, for their influence on the forms words have taken in England and in America. H. L. Mencken in his definitive *The American Language - Supplement Two* which gives a review of American spelling, including simplified spelling and spelling reform, is a primary reference for anyone developing new materials in spelling. Arbiters of spelling today are the editors of the four collegiate dictionaries: Webster's *Seventh,* the *American College Dictionary,* the *Standard College Dictionary,* and Webster's *New World Dictionary*; Webster's widely disputed *Third International Unabridged Dictionary*; *The Dictionary of American English, The Dictionary of Contemporary American Usage*, and *Modern English Usage*.

However many vocabularies or dictionaries are published, few comprehensive spelling texts are available for adults. Spelling, unfortunately, is thought to be an elementary subject; any emphasis upon spelling beyond the eighth grade is considered an immature attempt "to teach an old dog new tricks." Twenty-five years ago, Webster's *Fifth* included as "Introductory Matter" one of the finest sections on Orthography ever written for college students. The *Seventh* includes under "Back Matter" a longer, less meaningful section on Spelling. Because the dictionaries themselves are inconsistent in preferred American spelling, anyone who teaches spelling becomes, in a way, his own arbiter.

The most significant new approach to the problem of spelling stems from the linguists. Recognition that the overall problem of spelling is basically a linguistic one (Algeo, 1965) can influence spelling through teaching the structure of the language and the phonemic and morphemic structure of words, the sounds of English, and relationship between pronunciation and spelling. Stabilization of American Spelling by using the phonetic alphabet is beginning to win proponents, including a man who has taught secretarial training for thirty-three years (Marford, 1965).

Two recent studies of note are linguistic in approach. One, at Berkeley, shows no significant results in spelling through generalization and linguistic structure approach (Glim, 1965). Another (Hodges, 1964) concludes that a structural similarity in the phonemes proves American spelling to be largely a surrogate of the spoken language, but how well phonemic study can help one spell is undetermined. This latter study is the initial phase of a larger study at Stanford University, "Phonome (sic) Grapheme Relationships Basic to Cues for Improvement of Spelling" (Paul R. Hanna and Lee L. Jacks, Cooperative Research Project 1991, January, 1963-October, 1964), results of which are forthcoming. This is one of the few studies directly related to spelling as a total-education concept. Of the five spelling projects granted under Cooperative Research between 1956 and 1963, the Hanna/Jacks study is the only one not specifically limited in area.

Methods of teaching spelling have varied little in two hundred years until the behavioral psychologists showed a new way. Spelling bees and oral class spelling led to dictated lists, equally unnatural situations for people who need to spell as they write. Auto-instructional or programed spelling is proving useful. TMI self-instruction has been proved as effective as flashcard instruction. (Buzby and Mann, 1962). TMI programed spelling has been proved more effective than conventional text at the fourth-grade level. (Grell, 1964) Although no attempt is being made here to list all of the experiments in spelling, one in particular is applicable to the university situation. In an experiment conducted in Oregon with 606 high school and college students in 26 paired experimental classrooms, using two self-instructional methods, "no significant differences were attributable to method alone"; conclusions were that "effort appeared a more decisive factor than method." (Wallace, 1965)

That there have always been good and bad spellers is likely to suggest that there always will be those for whom spelling is difficult. Yet spelling continues to be taught at all levels of the educational system, with many adults unable to spell the simplest words. And the "enormous social importance of conventional spelling," to borrow Dr. Kitzhaber's phrase (Themes, Theories, and Therapy, 1963) places a formidable responsibility upon the university student. Paul Roberts in English Sentences, for example, advises students to learn to spell. "The misspelled word is the error that hits every reader in the eye," he says; the reader reaches the unjust conclusion that "you're a dimwit." (p. 256) Roberts gives three pages on spelling, with emphasis upon pronunciation and phonetic spelling, followed by a list of 300 words. (Roberts, 1962)

Handbooks and texts used for composition provide long lists for spelling, with a few simplified rules or suggestions, and the student or teacher is left to determine method. Workbooks are beginning to switch to self-help, without being auto-instructional or programed. One text worthy of mention is Spelling and Vocabulary (Ward, 1961/63) although it is not programed. Paperback spelling aids abound at the corner drug or university book stores; one which college students find helpful is Correct Spelling Made Easy (Lewis, Dell, 1963).

Published just as the spelling unit developed in this experiment was completed is a new spelling text for high school and college students Spelling Improvement: A Program for Self-instruction by Patricia M. Fergus. A very comprehensive programed text, with twelve chapters, 365 pages, and approximately twelve frames per page, it is recommended for independent study at the adult level.

Spelling, only part of the general language problem, fluctuates less than the methods for teaching it; the great bulk of words continues fairly constant in form until such time as phonetic spelling or spelling reform through a pen as firm as that of Noah Webster provides a completely new spelling. Neither recognition that spelling is basically a linguistic problem nor finding a way to teach spelling is new. Whatever can produce better spellers is commended, whether it be content or method. Research continues in both, a wide area for experimentation. Meanwhile, students cannot spell.

DICTION

An area not singled out for special experimentation or research is Diction, except as part of the wider range of linguistics---the word (with its phonological and morphological components) and vocabulary. The word diction itself is rarely used before the university level; diction is rarely taught as a subject, as is vocabulary. University students who find their themes marked "D" for diction confess they have not heard the word before and are not aware that the differences in words such as affect and effect, accept and except are errors in diction instead of spelling. As the Commission on English recognizes, "A good deal consists of choice---in diction, word form, sentence structure, the grouping or ordering of sentences in larger units." (Freedom, 1965) Experimentation with choice of words--diction--is either considered a part of the whole language picture or not treated specifically. The research being reported in Project S-192 is singularly isolated.

SENTENCE-TO-PARAGRAPH

A basic step in the actual process of writing is sentence arrangement and coherence in the paragraph, requisite for English composition. Whereas references to methods for composition as a whole are too numerous to cite, experimentation directed to paragraph construction, as undertaken in this experiment, is limited. All work being done under Project English, in all phases of English, especially the English institutes, under the National Defense Educational Act of 1958; in Teaching English as a Foreign Language; in government-sponsored projects; or in individual research and study in English in the secondary schools and universities, however, indicates a new concentration upon the habits and the usage of spoken and written American English.

With emphasis upon linguistics and structure of the language, colleges and universities, as well as high school and elementary schools are slowly shifting from conventional approaches not only to grammar but to writing. Publishers of English handbooks, workbooks, grammars, and composition texts are revising publications, trying to ride the wave of both traditional and structural. Grammar has taken on new meaning. The sentence has a new definition. Whether the classroom teacher or instructor of English is an active participant in the transition or a bystander as the methods around him change, he is teaching students to write by the best method at his command. The student who has nothing to say can rarely be taught to write anything worth reading. The student who knows nothing about putting words together, even though he has something to say, cannot express himself. A method to lead the student toward good writing, traditional or transformational, must deal with grammar--and with style. Putting words together educes style. Style employs grammar. That transformational grammar can be used in analyzing passages for style (Ohmann, 1965) gives credence to the New Grammar.

Writing uses language. Students deficient in language can benefit from a linguistic approach to writing. A pilot study of particular interest is being started at Brown University under a $206,000 Rockefeller Foundation grant. ("Language Clinic," NYT, April 5, 1965) Recognition of the fact that the academic deficiencies of many college students stems basically from a language problem is the core of the study to be made with Southern Negroes entering Tougaloo College in Mississippi; these students will be taught standard American English as if it were a foreign language. Linguistic materials to be prepared before the actual experimentation begins next year will be worth noting when they become available.

The concern of English staffs today, both university and secondary, is that students do not do enough writing.

> The problem of producing better writers, from the humblest level up, is the most important problem facing English departments today; in fact, it is bigger than English departments. (McDavid, p. 193)

Dr. McDavid, Professor of English at the University of Chicago, states what the project director believes: that students need utilitarian prose for their reports and other written work,

> . . . what people increasingly go to college to learn---and where English departments reject responsibility, they will be provided somewhere else in the organization. (p. 197)

Emphasis is being placed upon more intensive writing programs. An experiment at Ohio University in which students who did nothing but write 40 or 45 themes shows that grammar and mechanics can be taught concomitantly through individual help in laboratory class sessions with no lecture and no text assignments other than those directly related to errors found on the students' papers. (Culbert, 1965) Writing by imitation (Collignon, 1965), writing for clear thinking (Bossone, 1965), writing by campus tutorial (Bardwell, 1965) and writing through a combination of methods and purposes (Brogan, 1965)(Barnard, 1965) substantiate the fact that students who are being made to write, for whatever purpose, by learning what they need to know as they WRITE, do a better job than students who are shown how to write.

For establishing a basic behavioral pattern to lead the student toward improved writing, the programed method in language arts is being tested at different levels of achievement, with largely nonsignificant results, students learning with equal facility by programed and conventional methods. Results of an experiment with sixth-grade students using programed versus conventional teaching methods in vocabulary were nonsignificant. (Johnston, 1964) Results of a seventh-grade experiment using Min/Max teaching machine versus conventional methods showed that students learned with equal facility (Ruble, 1964). Results of an experiment in selected grades one, four, seven, and nine showed no significant difference between correlation of IQ and achievement by programed or non-programed instruction (McCormick, 1963). Results of a study of pacing rate and mode of presentation in programed instruction showed no difference at analysis of variance at five per cent (Lewis, 1964).

Two experiments with college students are noted. One (Feldman, 1964) concluded that format is not a critical determiner of learning, that

> Perhaps the significant contribution of programed learning will be an understanding of how to write textbooks which will communicate well and still offer the possibility for organization by the student as provided by a text. (p. 1738)

The second (Skogman, 1964) showed that the use of programed instruction in English grammar at Dana College in Nebraska "could not be proven unequal." Results of this experiment led to adoption of independent programed study for students to make up their own deficiencies outside the curriculum.

Although programed grammar has found favor and proved valid at different levels, programed writing or composition has had less success or less publication. Writing involves a continuous repertoire; writing is subjective; writing is less easy to program. A few auto-instructional "composition" texts are little more than workbooks. One text is worthy of mention, a result of the Yale Project in Composition under a Carnegie Corporation grant: A Programed Approach to Writing by Edward J. Gordon, Gary Burgard, and Prudence A. M. Young, Yale University. Primarily a seventh-grade text, it establishes patterns for the beginning writer. It, too, came to the attention of the project director after the Sentence-to-Paragraph Unit had been developed. The Yale text is a very comprehensive, carefully constructed text of 376 frames with sufficient space for practice in writing.

Related research is voluminous. An attempt has been made here to give a selected review of the current studies as they pertain to Project S-192. Not included in this report but suggested for further study is a comprehensive survey of the educational measurements available in the field of language skills and writing. Any research in English is as good as the weakest test administered to determine results.

CHAPTER V

PROCEDURE

I. Development of Programed Units

The approach to the current experiment is singular in that no other research in programing directly relates the word (spelling and diction) and the sentence (arrangement and coherence) to the paragraph. The project director, experienced in refresher and tutorial work, purposed to program special techniques which have proved of value in individual work. If a student who cannot spell can first be induced to write **WORDS** in the correct letter arrangement and to understand that misspelling is often incorrect word choice, he becomes more conscious of word arrangement in the sentence and paragraph. The subject matter is presented as traditional, developed not to teach new concepts but to simplify what the student presumably has already been taught. Programing is the method chosen for presentation of the subject matter.

Programed learning stems from the psychology of behaviorism, that organisms act (respond) to changes (stimuli) in given environments. Reinforcement of the response, if favorably altering the environment of the organisms, becomes stimulus for a new response. The whole concept of behavioral programing is that a stimulus elicits a response, which, if reinforced sufficiently well at each successive approximation toward the terminal behavior, should eventually result in the desired terminal behavior. To be adequate, a program should have a sequence of items arranged in gradual progression toward items which in themselves could become test items. (Holland, 1961) Programing for not only learning but unlearning must take into consideration the fact that a student has for too long taken the path of least effort with no predictable future; upon being driven by competition (i. e., the university or employment situation), he finds that he must increase the diversity of his tools. (Zipf, 1949) An auto-instructional text which can provide him the maximum of training with a minimum of effort will in itself provide motivation and stimulus.

Instruction as behavior must first determine the repertoire. Behavioral repertoires are discrete or continuous. Writing a whole composition, for example, is a continuous repertoire; spelling and word choice are, for the purposes of this experiment, discrete. Programed work with second-language students indicates that one who can operate in a continuous field can operate in a discrete field but cannot operate from discrete to continuous and that procedures appropriate to discrete reperoires, for example, are not necessarily appropriate to continuous repertoires. (Sapon, 1965) The same study shows that in paired-associate models, the native language responses serve as stimuli for the second-language response. Any course designed to reteach a native language is concerned with reinforcing new patterns as well as removing substandard patterns by extinction through no reinforcement.

Spelling and diction may be considered discrete repertoires; however, it can be assumed that there are continuous patterns within the two.

Spelling receive, however discrete its repertoire, leads to the continuous repertoire of all other ceive words; because of the nature of American spelling, the repertoire must be considered discrete. Diction, too, is discrete, with greater possibilities for continuous repertoire once a person has learned to distinguish morphemic constituents and basic word meanings. The third unit deals almost entirely with a continuous repertoire: word and sentence arrangement is an individual matter within a strangely rigid set of discrete patterns frequently unestablished by previous language training.

Discrete repertoires are more easily constructed because establishing known percepts can, by successive approximation, by fading, and by continued reinforcement, lead the student through the mininal steps toward terminal behavior desired. Step-size for the university student is difficult to determine for he rejects steps he thinks too simple but cannot recognize his own inability to comprehend larger steps. The units were developed with four thoughts in mind: 1) the native language is being retaught so that the student will unlearn substandard usage; 2) since the students, although capable of university work in their majors, are weak in English, the steps should be large enough to elicit responses but not small enough to provoke boredom; 3) the repertoire should be considered discrete for the first two units and continuous for the third; and 4) the units should provide ample practice in actual writing, especially the third unit.

The actual development of each unit comprised three steps:

1) establishing the terminal behavior for the unit
2) organizing the specific content to effect the terminal behavior
3) constructing the frames to provide sufficient reinforcement without too minimal step-size

Development of each unit is discussed separately below:

SPELLING

A spelling list (see Example A) compiled by the project director in 1963 was used as the terminal behavior. The list represented 300 of the most common misspellings from student themes matched against highest frequencies of occurrence on lists from four commercial lists for college students. (Texts in which the lists appear are starred (*) in the Bibliography.)

The divisions to be incorporated as distinct lessons within the unit were established as ten:

1. Sight and Sound
2. IE -EI Rule
3. Final E
4. Final Consonant
5. Final Y & LY
6. Tricky Suffixes
7. Prefixes
8. Etymology

SPELLING LIST E 8

ABSENCE
ABSURD
ACCIDENTALLY
ACCOMMODATE
ACCOMPANY
ACCUMULATE
ACCUSTOM
ACHIEVEMENT
ACHING
ACKNOWLEDGMENT

ACQUAINTED
ACQUIRE
ACROSS
AGAIN
ALLOTTED
ALL RIGHT
ALWAYS
AMATEUR
AMONG
AMOUNT

ANALYSIS
ANALYZE
ANOINT
ANNUAL
ANXIETY
ANY
APOLOGY
APPARATUS
APPARENT
APPROPRIATE

ARGUMENT
ARGUING
AROUND
ARTICLE
ASCEND
ASSISTANT
ATHLETE
AUDIENCE
AUTHOR
BANKRUPTCY

BASICALLY
BECOMING
BEFORE
BELIEF
BELIEVE
BENEFICIAL
BENEFITED
BOUNDARIES
BROUGHT
BUILT

BUREAU
BUSINESS
BUSY
CALENDAR
CATEGORY
CEMETERY
CERTAIN
CHANGEABLE
CHOOSE
CLOTHES

COMING
COMMISSION
COMMITTEE
COMPARATIVELY
COMPLEMENT (I)
CONCEDE
CONFERRED
CONSCIENTIOUS
CONSCIOUS
CONTINUOUS

CONTROVERSIAL
CRUELTY
CONSUL
COUNSEL (CIL)
DECIDE
DECISION
DEFENDANT
DEFINE
DEFINITELY
DEFINITION

DEPENDENT
DEPTH
DESCEND (_NT)
DESCRIBE
DESCRIPTION
DESERT
DESSERT
DESPERATE
DISADVANTAGE
DISAGREE

DISASTROUS
DISCIPLINE
DINING
DOLLAR
DYING
ECSTASY
EFFECT
EIGHTH
ELEMENTARY
ELIMINATE

EMBARRASS
EMINENT
ENCOURAGING
ENEMY
ENVIRONMENT
EQUIPPED
ETC. (ET CETERA)
EXAGGERATE
EXCEED
EXISTENCE

EXISTENT
EXPENSE
EXPERIENCE
EXPLANATION
FAMILIAR
FASCINATE
FINALLY
FOREIGN
FORFEIT
FORTH (FOURTH)

FORMALLY
FORMERLY
FRIEND
GAUGE
GENEALOGY
GOVERNOR
GRAMMAR
GRANDEUR
GUARD
GUESS

GUILT
HALF
HAVEN'T
HAVING
HEIGHT
ILLEGIBLE
IMMIGRATION
IMMINENT
INDEPENDENCE
INFINITE

INTELLIGENCE
INTEREST
ITS (IT'S)
ITSELF
JUDGMENT
LABORATORY
LED
LEISURE
LITERAL
LOGICALLY

LONELY
LOSE
LOOSE
LOSING
LYING
MARRIAGE
MANY
MEMORABLE
MERE
MINUTES

MISSPELLED
MOMENTOUS
NECESSARY
NICKEL
NONE
NOTICEABLE
OCCASION
OCCASIONALLY
OCCURRED
OCCURRENCE

OCCURRING
ONESELF
OPERATE
OPINION
OPPORTUNITY
OPTIMISTIC
ORGANIZE
OURSELVES
OVERRUN
PAID

PAMPHLET
PARALLEL
PARTICULAR
PASTIME
PERFORM
PERFORMANCE
PERHAPS
PERMISSIBLE
PERSONAL
PERSONNEL

PHILIPPINES
PHYSICAL
POEM
POSSESSION
POSSIBLE
PRACTICAL
PRECEDE
PREFERENCE
PREJUDICE
PREPARE

PREVALENT
PROBABLY
PRINCIPLE (PAL)
PRIVILEGE
PROCEDURE
PROCEED
PROFESSION
PROFESSOR
PROMINENT
PROOF

PROVE
PROVING
PURSUE
QUANTITY
QUIET
QUITE
QUITTING
QUIZZES
READY
REALLY

RECEIVE
RECEIVING
RECOMMEND
REFERENCE
REFERRING
REPETITION
RESERVOIR
RESTAURANT
RHETORIC
RHYTHM

SAFETY
SCHEDULE
SCIENCE
SECRETARY
SEIZE
SENSE (SINCE)
SEPARATE
SEPARATION
SEVERELY
SHINING

SHOULD
SIEGE
SIMILAR
SINCERELY
SOME
SOPHOMORE
SPECIMEN
STOPPED
STUDYING
SUCCEED

SUCCESSION
SUPERINTENDENT
SUPERSEDE
SUPPOSE
SUPPLY
SURPRISE
STATIONARY (ERY)
TEARING
TECHNIQUE
TEMPERAMENT

TEMPERATURE
TENDENCY
THAN (THEN)
THEIR (THERE)
THEY'RE
THEREFORE
THOROUGH
TO (TOO) (TWO)
TOGETHER
TRANSFERRED

TREASURER
TROUBLE
TYRANNY
UNDOUBTEDLY
UNGRAMMATICAL
UNIVERSAL
UNIVERSITY
UNNECESSARY
UNSOPHISTICATED
UNTIL

USING
VACANCY
VALUABLE
VERY
VILLAGE
VILLAIN
WEATHER
WEIGHT
WEIRD
WHERE

WHETHER
WIELD
WOMAN
WRITE
WRITING
WHOSE (WHO'S)
YIELD
YOUR
YOU'RE
YOURSELVES

EXAMPLE A

9. Mnemonic Tricks
   (Intergrams & Pairs)

10. Abracadabra for Verbal Demons

From the list were selected the words applicable to each division, the frames being constructed toward the terminal behavior for that lesson. The lessons did not have terminal tests or review sections. No atempt was made to acquaint students with the phonetic alphabet. The frames were constructed from the known to the unknown, with fading and repetition toward the terminal behavior, for a total of 582 frames (misnumbering accounts for the 580 in the unit). Lessons varied from approximately 50 to 90 frames.

Four basic rules were given: Lessons 2, 3, 4, and 5. Because students have studied no Greek and very little Latin and too often kow neither the spelling nor the meaning of the word etymology, Lessons 6, 7, and 8 were included. Traditional phraseology was used here, as in Lesson 1. Revision of the text will place more emphasis upon morphology and phonology in these lessons. Lessons 9 and 10 are tricks which have proved useful in teaching spelling. The word intergram (literally, the writing between the beginning and end of the word) is coined as a key to spelling. Mnemonic tricks often provide the poor speller with a new interest in words. The last section, abracadabra (nonsense), is an extension of Lesson 9. This section, admittedly includes a good many words which are demons for some people but not for others; rote memory must still be used for demons.

DICTION

Malapropisms creep into the speech and writing of nearly every native speaker from time to time, but the written errors which result from our great aural preoccupation both at work and at play result in not only misspelling but incorrect word selection: students take matters for granite and write about gold posts. The mixed metaphor is an example of poor word choice. The meanings words connote are the beginning of style. The Diction Unit was difficult to develop; it did not lend itself easily to programing; whatever the weaknesses in the program, however, it found favor with the students, who expressed regret that they had not had a similar unit in high school.

Terminal behavior for the diction unit was originally fifty word-choices (see Example B), carryover from exercises used earlier in E 8 classes. The unit was divided into ten lessons and expanded from the original terminal behavior; shifting from discrete behavior in the first seven lessons to continuous behavior in the last three lessons posed difficulties in constructing the frames. Below are given the ten lessons as included in the unit:

TERMINAL BEHAVIOR (DICTION)

A : AN

ACCEPT : EXCEPT

AFFECT :: EFFECT

ALL RIGHT

ALLUDE : REFER

ALTOGETHER :: ALL TOGETHER
ALREADY :: ALL READY

ALUMNUS(I) :: ALUMNA(AE)

AMONG : BETWEEN

AMOUNT : NUMBER

AND : BUT

ASCENT : ASSENT

BECAUSE : THAT

BESIDE : BESIDES

BURST : BUSTED

CAN HARDLY : CAN'T HARDLY

CITE : SITE : SIGHT

COMPLEMENT : COMPLIMENT

COMPLEXIONED : COMPLECTED

COUNCIL : COUNSEL : CONSUL

COURSE : COARSE

CREDIBLE : CREDITABLE

DATUM : DATA
(STRATUM : STRATA)

DONE : DID

DON'T : DOESN'T

FARTHER :: FURTHER

FEWER : LESS

FORMERLY : FORMALLY

FROM : THAN

GOOD : WELL

HAD OUGHT

HEALTHY : HEALTHFUL

HUNG : HANGED

IN : INTO

LADY : WOMAN

LEAVE : LET

LIABLE : LIKELY

LIE : LAY

LIKE : AS IF

LOAN : LEND

PRACTICAL : PRACTICABLE

PRINCIPAL : PRINCIPLE

RAISE : RISE
(RAISED : ROSE)

RAISE : REAR

REAL : REALLY (SURE : SURELY)

RESPECTFULLY : RESPECTIVELY

SHOULD OF : SHOULD HAVE
(COULD OF, WOULD OF, ETC.)

SITTING: SETTING

STATUE : STATUTE

TO : TOO : TWO

USE : USED (ASK : ASKED)

EXAMPLE B

1. Misused Verbs

2. Misused Verb Forms
   (Grammatical Vulgarisms)

3. Nouns - Meanings
   (Frequently misused)

4. Misused Modifiers (Adjectives)

5. Misused Modifiers (Adverbs)

6. Misused Modifiers
   (Adverb-adjective confusion)

7. Misuse of Function Words

8. Words as Symbols
   (Connotation and Denotation)

9. Words as Expression
   (Specific or General/Abstract or Concrete)

10. Words as Expression
    (in Science and The Arts)

From the original list were chosen the area to be treated. (Starred (**) in the Bibliography are the sources and authority). A total 450 frames were developed, with from 25 to 100 frames per lesson. The first two lessons treated verbs, misuse of verbs in Lesson 1, mistaking one word for another; and misuse of verb forms in Lesson 2, mistaking done for did, of for have, and so forth. Lessons 4, 5, and 6 developed the concept that distinguishes an adjective from an adverb (and their reasons for being either). Lesson 7 treated misuse of function words---determiners, prepositions and conjunctions. Lessons 8, 9, and 10 expanded the unit into the abstractions of words as a point from which to begin the third unit of the project.

SENTENCE-TO-PARAGRAPH

Terminal behavior planned for Unit III was ten basic paragraph patterns. Because of the nature of the continuous behavior being established by the unit and because of the pressure of time imposed by the project as a whole, terminal behavior was limited to one paragraph---the ability to arrange sentences in coherent order from a topic sentence into ONE good paragraph. An example of a student's progress is given in the Appendix.

Following the Diction Unit and completion of English 3200 (grammar and punctuation), the unit was divided into ten lessons of 239 frames.

1. Word Association
2. Word Order
3. The Topic Sentence
4. The Topic Sentence Expanded: Unity
5. The Topic Sentence Expanded: Coherence
6. The Paragraph
7. Purpose in the Paragraph
8. Arranging Sentences
9. Constructing a Coherent Paragraph from Given Sentences
10. Constructing and Arranging Coherent Paragraphs from Given Notes

The concept developed in the ten lessons was from word-association to sentence-association. The first two lessons treated not grammar so much as meaning, establishing that word-association is the beginning of the kernel sentence and that the meanings of words are not always the same for writer and reader. Lessons 3, 4, and 5 treated the topic sentence as being a full sentence, complete in unity and coherence, in need of further expansion to a paragraph. Lessons 6 and 7 established the concept that although paragraphs may vary in length and content, they must have purpose. The last three lessons--8, 9, and 10--treats the arrangement of sentences, giving the student practice in actual writing or rewriting and arranging sentences into paragraphs.

Student reaction to Unit II was diverse with little predictability although even students who did not like doing the unit admitted it helped them.

An adequate test should have been developed for this unit. The testing instrument used was inadequate. Revision and expansion of the units require inclusion of an educational measurement commensurate with the material presented.

CHAPTER VI

PROCEDURE II

Demonstration of the Programed Units

Demonstration of the programed units comprised the second phase of the project, to test the effectiveness of the units developed in phase one and to effect economy in curriculum time and staff personnel required, toward eventual elimination of E 8 from the curriculum. Predemonstrational procedures established for composition, selection, and administration; class enrollment; presentation of subject matter and educational measurements; and limitations imposed by time determined the course of the demonstration.

Preliminary procedures were established by the project director and the Chairman of English Composition at CSU. All E 8 sections were under the direction of the project director and one graduate assistant in English, replacing from three to five instructors formerly required to teach the course each quarter. The course was scheduled twice daily, morning and afternoon, each Monday, Wednesday, and Friday in a facility adequate for an enrollment of 60. The larger of the two enrollments, which each quarter was the morning class, served as the experimental section; the smaller--the afternoon class, the control. The sample was therefore random with no attempt made to screen enrollment. It was agreed to follow the procedure established during the 1963-1964 experiment with programed English 3200 that classes meet formally with roll call only on Monday of each week and report on Wednesday or Friday for unit tests or individual help. Both control and experimental classes were permitted freedom of class attendance, with presence required only on Monday. The project director and graduate assistant met both control and experimental classes, giving individual assistance, administering tests and conducting both classes as laboratory workshops.

A total of 320 students enrolled in E 8 during the year. Tabulation of disposition of these students is given below. (Table I)

TABLE I

Disposition of Students

Class*	Total started program	Dropped	Withdrew P/F	Did no work	Audited	Total Completing Program
XF	58	1		1		56
CF	35	2		1		32
XW	63	2	1 WP	1	1	58
CW	60	1		1	1	57
XS	69	9				60
CS	35	2	1 WF	1		31
Totals	320	17	2	5	2	294

*For purposes of analysis and tabulation, X--experimental; C--control; F--fall; W--winter; S--spring.

Both control and experimental classes were given the same educational measurements and certain other forms for collection of data. During the first week of each quarter, students were asked to fill out a Student Information Sheet, (Example C) and were administered three pretests which were given again at the final examination hour for each class scheduled during Final Week. During the third and next to last weeks of each quarter, students were asked to complete an attitude scale. Near the beginning of the quarter students were administered a verbal aptitude test.

Since the experiment itself was an outgrowth of demands made by three types of students, expecially those required to pass the English Proficiency Examination, it had been agreed earlier to use the same tests for the E 8 class as those used for the EPE: The American College Testing series and a spelling test developed by the project director for E 8 classes. To these two tests was added a third test, one in diction which had been used in E 8 classes in past years. Unavailability of CEEB scores or other verbal scores for all students enrolled necessitated administration of a verbal aptitude test: The American Council on Education Psychological Examination for College Freshmen. Because classes using programed English 3200 during the 1963-1964 term were included in an experiment conducted by Dr. C. O. Neidt on Changes in Attitudes During Learning (Title VII--Project Number C-1139) and administered the Attitude Scale developed for that experiment, the same scale was selected for 1964-1965 classes to determine relative class attitudes.

Although grades are not included as a part of the analysis of this experiment, it should be stated that the course grade for each class was determined only by a scale, established earlier by the project director

E 8 19__-19__ Term

Class__________

STUDENT INFORMATION

Name (last name first)____________________

High school from which graduated____________________

City & State____________________

Year graduated__________

Year in CSU
Freshman______
Sophomore______
Junior______
Senior______
Graduate______
Other______(Explain)____________________

What is your major?____________________

What is your reason for taking E 8?____________________

Have you failed an English Composition course?____________________

Explain, if you have failed such a course.____________________

____

Have you failed the English Proficiency Examination?____________________

If so, explain.____________________

Are you a transfer student?__________Are you married?__________

What magazines do you read regularly?____________________

Your age?__________Sex?__________

What, in your opinion, is the reason for your deficiency in English?__________

____

____

EXAMPLE C

and agreed to by the Chairman of Composition, based entirely upon rate of achievement above the base-pre-test scores in ACT, spelling, and diction.

Demonstration of the programed units became three separate experiments because of time elements involved. Contributing to inequity in any experiment on a university campus is the variation in length of terms in which the experiment is conducted. At Colorado State University, the fall quarter is considerably longer and more free from interruption and campus activity than are the other two quarters. Table II below will show the variation in quarter-length.

TABLE II

CSU Quarter-Length

	Term, including registration and final week	Term, class meetings	Number of class periods	Number of weeks of instruction
Fall Quarter	September 16-- December 15	Sept. 21-- Dec. 9	32	11
Winter Quarter	January 4-- March 16	Jan. 6-- Mar. 10	28	9
Spring Quarter	March 22-- June 4	Mar. 24-- May 28	28	9

Winter quarter was shortened four class periods further because of difficulties stemming from pre-registrations procedures; some students were as much as two weeks late in first attending class. A total of 24 class periods for actual class work in winter quarter made an eight-week quarter.

Of the two phases of the project, development and demonstration, the second was hindered by restrictions imposed by the first. Had the developmental phase first been a separate project, with sufficient time for thorough preparation, sample experimentation, and revision of units, results of the actual experiment would have been more meaningful. The pressure of time to complete the units for the student-demonstration phase of the project imposed a further inequity to the experimental conditions.

Distribution of the programed units developed as phase one constituted the actual experiment, other class conditions, administration, and testing being identical. Assignments in both classes were made at the beginning of each quarter. Daily assignments were dispensed with. Lecture and class discussion were used limitedly only in the control class.

It was established in Chapter III to have the spelling unit completed for use fall quarter, the diction unit by winter quarter, and the paragraph unit by spring quarter. The diction unit was completed just at the end of fall quarter and administered, regrettably late. The units were distributed to the students in the experimental class in the weeks noted below.

TABLE III

Distribution of Programed Units

	Spelling	Diction	Paragraph
Fall Quarter	Fifth week	Last week	- - -
Winter Quarter	Upon completion of English 3200 which for most students was the next to last week of the quarter		- - -
Spring Quarter	First week	First week	Third week

Work required of both experimental and control classes isgiven in capsule form in Table IV, examination of which is verification tha three separate experiments were conducted.

Since the subject matter for E 8 is primarily not compositn but pre-writing drill, largely traditional and prescriptive at present, oth classes used English 3200 for grammar, usage, punctuation, and entence construction, variety, unity and coherence. Inclusion of theEnglish 3200 schedule in Table IV is necessary because of the relationshipt bears to the other programed units used in the experimental class Because of the time element involved in preparing the units, as mentbned earlier, distribution of the units shifted from quarter to quarter. hat the students were extremely slow in completing English 3200 durir winter quarter and slighted the spelling and diction units in part explas the reason for early distribution of the units spring quarter. It was ab advisable spring quarter to have the students complete the unit onc thoroughly but keep it for continued review until the end of the quaer. Had the students been permitted to write their answers in the unitsretention might have been favored.. The control class remained mor controlled throughout the quarter, so far as subject matter assignmenwas concerned. (The materials used for the control class are shown ithe Appendix. Use of the fill-in tests with the programed unit is recomended.)

TABLE IV

Class Assignment Schedule

	English 3200	Spelling	Diction	Paragraph
Experimental				
Fall	Begun 1st week All answers to be written in separate notebook and submitted at end of quarter. All unit tests to be completed.	Begun 5th week All answers to be submitted in separate notebook by end of quarter.	Begun 10th week. (Same as spelling.)	Reference to *Harbrace* 320-343. Paragraph at beginning and end of quarter.
Winter	Same as above.	Spelling and Diction Units to be completed and answers submitted in separate notebook upon completion of *English 3200*.		Same as above.
Spring	Begun 3rd week Otherwise same as above.	Begun 1st week. Spelling and Diction Units to be completed with answers submitted in separate notebook by beginning of third week of quarter. Units to be retained by student until end of quarter.		Begun 3rd wk. To be completed with answers in Paragraph Unit and submitted by end of quarter.
Control				
Fall		Spelling rules handed out for individual study.		Reference to *Harbrace*.
Winter	Same as Fall Experimental above.	List of 300 words handed out for rote memory.		Same as Fall Experimental above.
Spring		Fill-in tests to be taken until mastered. Diction lists handed out. Reference to *Harbrace* on Diction. Limited class discussion and lecture.		

An experiment, to be valid, should be performed under controlled conditions admitting no unnecessary variables. It is evident from the table that conditions were not ideal. Winter quarter experimental students were entirely too pressed for time; this particular class started with 16 enrollees, expanded to the total of 58 because of a weakness in pre-registration. Students who had failed winter-quarter E 2 learned the first week of the quarter that they had been recommended for E 8 before being readmitted to E 2 classes which are prerequisite to E 3 and E 4. These students were greatly hampered. With a late start and the additional units to be completed, students, having already failed one or more courses, found it impossible to do the work required. It was the fault of the administration of the units that they were not distributed or required earlier. An eleemosynary dereliction on the part of the project director worked to the disadvantage of both students and experiment.

Spring quarter experimental conditions were ideal. The experimental class had all three units, with spelling and diction required first and the paragraph unit required upon completion of English 3200, the normal sequence originally planned.

The greatest need pointed up by the experiment is for a test which will accurately measure what the students need to learn (pretest) and have learned (posttest). The ACT (Form 4-AC) is made up of three short essays, intentionally poor, to be edited. A 50-minute timed test, it is difficult to administer in a 60-minute class period. Areas of punctuation, reference, and agreement are adequately covered, as are verb and pronoun usage;

spelling, diction, variety, coherence, unity, and sentence construction are not covered well enough. The advantage of the ACT is that it is not a series of individual sentences to be corrected; it is good in not being completely objective; on the other hand, it is not inclusive of subject matter taught and in trying to be subjective does not give clearcut choice for the student; there is no way for him to identify errors on his own and to do his own editing. With four choices (outlined in the skeletonized essay) for underlined errors, the test increases an element for queaswork.

Yet the testing instrument alone is not at fault; imposed pressure of time, both in preparing the units and in registering students, altered results to the extent that as the year progressed it was possible further to hypothesize that:

1) within sections
    a. spring quarter (XS) students should make a better showing than XF or XW in all areas.
    b. XW should make a poorer showing than either XF or XS.
2) between sections
    a. all sections should do equally well on ACT.
    b. CF and CW spelling results should be higher.
    c. CW, not so late in starting, should do better than XW.
3) smaller classes, especially in the facility provided, might reflect better results from testing conditions.

It is worth noting that students are conditioned far beyond the experimental area. Students who think and talk as they live together, despite arbitrary assignment to a control or experimental class, alter the results of any experiment performed to condition one segment of their learning behavior.

CHAPTER VII

ANALYSES OF THE DATA AND FINDINGS

Of the total of 320 students originally enrolled in the experiment, complete data were processed for 294: 88 fall quarter, 115 winter quarter, and 91 spring quarter. Since the sampling was random, the composition of each class for each quarter of the academic year varied sufficiently in numbers and individual differences to presuppose no significance from class composition alone. Although general student background is difficult to determine, E 8 students are considered especially weak in English with a mean low accumulative average. Past grades in English, in either high school or university, except for failures in E-series courses or the English Proficiency Examination, are not available. The student information sheet provided both variable and nonvariable characteristics: sex, residence, age, year in university, major, transfer and marital status, reading habits, and E-series or EPE failure. Major and transfer and marital status were considered of insufficient number to be a sample. Unmeasurable characteristics such as 1) motivation, 2) hours of study, 3) amount of sleep, 4) reliance on friends or relatives, 5) state of health, 6) hour of class meeting were not kept. Total numbers for data assembled for IBM processing are tabulated below. (TableV)

Table V shows that 174 students were in the experimental class and 120 in the control class, roughly a 60% - 40% distribution. The mean age of the students participating was 19.965. The age of the experimental group

TABLE V

TOTALS FOR DATA ASSEMBLED FOR IBM 1401 PROCESSING

	XF	CF	XW	CW	XS	CS	TOTAL X	TOTAL C	TOTALS	Percentages of Totals
TOTALS FOR WHOM DATA WERE COMPLETE	56	32	58	57	60	31	174	120	294	
Men	40	20	49	40	32	19	121	79	200	68
Women	16	12	9	17	28	12	53	41	94	32
In-state	38	23	46	44	47	30	131	97	228	78
Out-of-state	18	9	12	13	13	1	43	23	66	22
Mean Age	19.607	19.687	20.081	20.263	20.016	20.032	19.908	20.050	19.965	
Year in University:										
Freshman	30	17	42	45	38	15	110	77	187	64
Sophomore	7	4	4	3	6	8	17	15	32	11
Junior	5	6	6	4	5	5	16	15	31	11
Senior	14	5	6	3	11	3	31	11	42	14
Other				2					2	

was slightly lower than the age of the control group, insufficient to alter the results of the experiment. Two hundred men (68%) and 94 women (32%) participated, with the highest number of men in the experimental group. The students from Colorado numbered 228 (78%) and the out-of-state students, 66 (22%). No attempt was made to determine the difference between metropolitan high school graduates and graduates from smaller high schools. Even though a student has been graduated from one high school, he has frequently attended more than one high school, an added reason for his deficiency in language arts. Sixty-four per cent of the students in the experiment were freshmen, a total of 187 students. By classes, there were 32 sophomores, 31 juniors and 42 seniors (14%).

In Table VI are listed numbers of students by reading habits and previous failure in E-series or EPE. Although the sampling is small for the reading habits of students enrolled, information was tabulated and grouped according to the kinds and numbers of magazines read; no check was made upon the number of kinds of books read. The nonreader was one who indicated that he read nothing regularly or only a picture magazine or newspaper. The average reader was one who listed two or three magazines, including a news magazine, but not a quality magazine. Those classified as readers read more than three magazines, including those like *Fortune*, *Scientific American*, *Atlantic*, *Harper's*, *National Geographic*, and so forth. Average readers outnumbered non readers and readers each quarter.

TABLE VI

NUMBERS OF STUDENTS BY READING HABITS, E-SERIES FAILURE, EPE FAILURE

Class	XF	CF	XW	CW	XS	CS	TOTAL X	TOTAL C	TOTALS
Reading Habits									
Non readers	18	13	22	20	21	9	61	42	103
Ave. readers	27	14	28	32	25	21	80	67	147
Above average readers	11	5	8	5	14	1	33	11	44
Failed E-series	7	6	28	31	23	14	58 (33-1/3%)	50 (42%)	118
Failed EPE	3	2	4	2	3	3	10	7	17

Students who had failed the E-series (E 2, E 3, E 4, E 5, or E 6) numbered 118 (40%). Students who had failed the EPE numbered only 17. Failures in either E-series or EPE, as has been stated before, are not required to take the course. Seniors who do take the course are usually married, with a job in sight, conscious of their limitations and determined to correct their faulty habits. Fall-quarter E-series failures enrolled are low; failures from the freshman E 2 fall classes enroll winter quarter; and failures from the E 3 or E 4 winter quarter enroll spring quarter. During winter quarter in both experimental and control classes, almost half of the class composition was E-series failures.

Two preliminary analyses were made prior to the final analysis: t-tests on fall-quarter results and a frequency distribution on results for all three quarters. When the experiment was proposed, tabulation and computation at the end of each quarter were intended. It became evident, however, that computation of all data at the end of spring quarter would be more economical. Preliminary computations run by a graduate assistant in psychology on results obtained from fall quarter warranted the continuation of the experiment as planned. His results showed that

1) a t-test between the last administration of the ACT for both groups yielded

$t = .316$ nonsignificant

2) a t-test between the change in scores for each student for the ACT, pre and post tests, both groups, yielded

$t = .662$ nonsignificant

3) a t score of 1.39 was found between the means of the aptitude scores of the two groups (nonsignificant)

4) the mean of the control group aptitude score was higher by 3.87

5) a t-test between change in spelling scores for each student, pre and post tests, both groups, total data, yielded

t = 4.47 significant at the 5% level and 1% level

6) a t-test between change in spelling scores for each student, pre and post tests, both groups, adjusted data, yielded

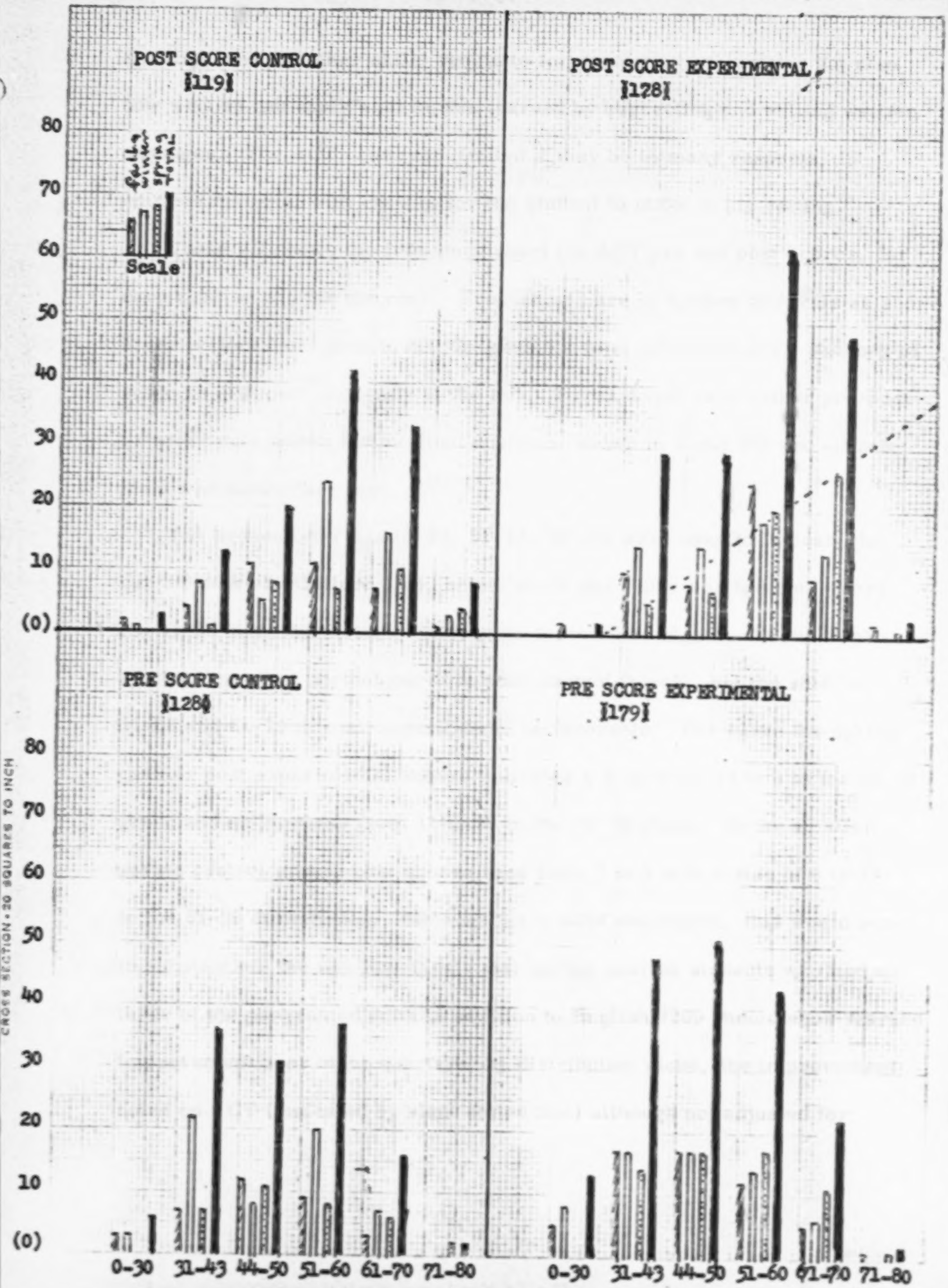
t = 2.48 significant at the 5% level
nonsignificant at the 1% level.

This preliminary analysis confirms the sub-hypotheses formulated in the last chapter that ACT results should be substantially the same for the two groups; that spelling scores for the control group should be higher. That the aptitude scores for the control group proved higher was unsuspected.

By "adjusted data" in 6) is meant the elimination from the original data of scores for those students who, to the knowledge of the project director, had neither had time to do the spelling unit nor completed it upon starting. No such adjustment was made in any further data analyzed for the experiment though warranted for more favorable results.

Graphic representation, though showing no correction in variables, depicts clearly any noticeable differences in achievement. Totals were kept for pre and post ACT scores and a simple frequency chart made for both the experimental and control groups, for each quarter and for the year. Mention has been made before of the inadequacy of the measuring instruments; it bears repeating here that a new test of the total language area is needed, one that will show not only how much a student knows of grammar,

TABLE VII. FREQUENCY DISTRIBUTION - PRE AND POST ACT SCORES EXPERIMENTAL & CONTROL



spelling, and the other skills requisite for competency in writing but also how well he can apply what he has learned by correcting and editing written passages. The ACT, however limited it may be in many respects, IS editable material with choices for the student to make in his editing.

Table VII shows the frequency chart for ACT pre and post scores, for each quarter and for the year. Frequencies are by broken intervals as shown at the bottom from zero to 80, the possible total correct score. Number of subjects is shown vertically at the left. Totals do not tally either pre-post or with totals shown for the final analysis; shown in Table VII are all subjects who took either test.

The broken intervals (0-30, 31-43, 44-50) were used to indicate the cut-off score for failure - 43, below which any score was failure. Were the 41-50 scale consistent, the frequency would be higher. Of the total scores, the most normal curve is post-control (black), but the shift to 51-60 and 61-70 in post-experimental is favorable. The curve for spring quarter post experimental scores indicates a drop from 14 to 5 in the 31-43 group and an increase from 11 to 26 in the 61-70 group. In the smaller spring control group, post scores drop from 7 to 1 with a rise of 6 to 10 in the 61-70 distribution. Although not a valid conclusion, this would serve to substantiate the sub-hypothesis that spring quarter students who had all three of the programed units in addition to English 3200 should show marked improvement over other quarters; by distribution alone, the improvement noted on ACT (indicated by slant dotted line) although not adjusted for

TABLE VIII

ACT HIGH AND LOW SCORES AND MEDIANS BY QUARTER
Possible High - 80 (R x 1)

		XF	CF	XW	CW	XS	CS
High Score	Pre	71	68	70	70	70	74
	Post	74	71	69	74	73	77
Low Score	Pre	16	22	24	22	32	34
	Post	28	27	31	27	39	36
Median	Pre	43.5	45	47	46	51.5	54
	Post	51.0	49	50	50.5	56	56.5

TABLE IX

PRE-SPELLING HIGH AND LOW SCORES AND MEDIANS
Possible High - 100 (R - W)

	XF	CF	XW	CW	XS	CS
High	90	84	70	88	92	90
Low	00	30	10	03	18	22
Median	57	45	45.5	40	46	55

TABLE X

PRE-DICTION HIGH AND LOW SCORES AND MEDIANS
Possible High - 100 (R x 2)

	XF	CF	XW	CW	XS	CS
High	90	92	88	92	94	92
Low	48	62	58	54	58	52
Median	69	77	73	74	76	72

difference in aptitude is substantial. Similar frequencies were not prepared for spelling and diction.

A tabulation of high and low scores and medians on the ACT (Table VIII), Spelling (Table IX) and Diction (Table X) is given for both groups by quarter. This information is tabulated merely to emphasize the erratic behavior of the human organism under test conditions and to show the heterogeneity of class composition at the beginning of each quarter. Conditions in all classes cannot be laboratory simulated with all variables controlled.

The highest ACT score on a pre-test is 74 out of 80 in the CS section. The lowest score is 16 for the XF, which dropped that section to the lowest median of 43.5. (All medians represent total registration including students who later dropped.) The subject making the 74 increased his score to 77, the highest post-score made. In all control groups the same person increased his own score to a new post high score: 68--71, 70--74, 74--77. In the experimental groups, the same person raised his score from 71 to 74 for the highest experimental score; during winter quarter the 70 pre-high fell to a post-64; the 69 post high rose from a pre-67; during spring quarter the pre-high 71 dropped to post-70; the post-high 73 rose from a pre-45, which could suggest either poor individual pre-test conditions, conscious control of the conditions, or an element of guesswork.

Control group lows were less inconsistent than the experimental group lows. In the fall control group (CF), the low of 22 raised his score to 27;

TABLE XI
ATTITUDE SCORES
F-RATIOS BY QUARTERS, CLASS CONDITIONS AND PRE-POST TESTS

Quarter	Class Conditions	Pre-Post Tests
Fall	.37	4.05*
Winter	8.31**	.60
Spring	13.67**	.40
Total	6.69*	2.29

*Significant at 5% level
**Significant at 1% level

TABLE XII

MEAN ATTITUDE SCORES BY QUARTERS, CLASS CONDITIONS AND PRE-POST TESTS

Quarter	Class Conditions	PreTest	PostTest	N
Fall	Experimental	73.0	68.6	51
	Control	72.3	70.8	29
Winter	Experimental	64.4	62.1	49
	Control	68.8	68.2	54
Spring	Experimental	67.3	67.6	54
	Control	69.8	70.4	28
Total	Experimental	68.3	66.2	154
	Control	69.9	69.4	111
			Total	265

during winter quarter, of two lows of 22, one rose to 48, the second to 27; CS low of 34 rose to 48, whereas the post-low of 36 dropped from a pre-low of 38. Experimental lows were extremely erratic: XF pre-low 16 rose to 51, with the post-low 28 rising from a pre-low 23; XS pre-low of 32 rose to 43; post-low 39 dropped from a 41. Rate of achievement is an individual matter, with many variables influencing change in score.

Table IX shows a low of zero for XF, with a high of 90; a low of 3 for CW, with a high of 88---further establishing deviation in test results. Table X is self-explanatory.

The weakness of the testing instrument could very well be at fault here although there is no scientifically sound basis for the assumption. An adequate test should incorporate spelling, diction, punctuation, grammar and usage, and sentence construction, arrangement, and coherence. The slow reader has difficulty completing the ACT. The IBM answer sheets necessitate transposition of an answer formulated during reading; one missed line can throw out a whole column of answers. Tests, as they have become more easy to grade mechanically have become more difficult to take humanly, suggesting that no true test of a person's writing and verbal aptitude by form test can be developed.

In summary, the results of the analysis of the data in Tables XI and XII indicate that

1) The fall quarter post-test scores were significantly lower than the pre-test scores

2) The winter quarter control group scores were significantly higher than the experimental group scores.

3) The spring quarter control group scores were significantly higher than the experimental group scores.

4) The total analysis reveals a slight significance indicating the control group maintained higher attitudes for the year. There was no significant difference noted between the pre- and post-test scores for the year.

Experimentation with changes in attitude (Neidt, 1964) in programed classes shows that mean attitude scores range from a high of 82.3 (teacher-paced German, CSU) to a low of 65.0 (programed letter writing, State Farm Insurance). Programed English at CSU (1963-1964) using only English 3200 had a mean attitude score of 68.5. Means between large and small classes indicate a higher attitude the smaller the class: Small Anthropology (CSU)--65.0, Large Anthropology (CSU)--60.5; Small English Composition (CSU)--56.3; Large English Composition (CSU)--49.9. A small class in Educational Psychology at the University of Missouri made a mean score of 47.8; the large class made 49.3; both of these scores are relatively low. In the light of these figures, the post-test attitude scores for both experimental and control classes were high, indicative of a good general attitude. That the control group maintained a slightly higher attitude throughout the year may be attributable to a false feeling of freedom from "extra work," difference in class size, or difference in aptitude (to be explained later).

The figure of 8. 31 for class conditions (Table XI) is consistent with class conditions and confirms the sub-hypothesis (p. 54). The 13. 67 significance spring quarter can be explained only by the fact that the experimental students were given more work to do; yet their attitude remained stable in contrast to the fall experimental class which entered with an extremely high attitude that dropped significantly. It must be kept in mind that winter and spring enrollments in the class are roughly fifty per cent previous E-series failures. The 13. 67 significance is inconsistent with the scores in contrast to the 8. 31 for the winter-quarter scores.

TABLE XIII

ACE L-SCORE RAW MEAN

XF	CF	XW	CW	XS	CS	Total X	Total C
51. 81	55. 69	56. 58	59. 00	64. 12	64. 50	57. 71	59. 41

The American Council on Education Psychological Examination for College Freshmen (1954 Edition - Test No. 140-45-1C) was given students in both experimental and control sections for a verbal aptitude score to use as predictor variable. Only the verbal parts of the test were administered: Completion, Same-Opposite, Verbal Analogies. The L-Score means are given in Table XIII, for each quarter and for the year. That the mean is higher for the control sections consistently each quarter is inexplicable; it should be remembered that the control sections met in the afternoon, unlikely variable for achievement. The project director and assistant were unprepared for the marked difference, especially the winter-quarter means. Conditions under which the experimental section took the examination may be at fault here.

The previous assumption of level of achievement is substantiated. For ACE norms for L-Score percentiles for four-year colleges, both men and women, the control group falls in the 36th percentile; the experimental in the 34th. For all colleges (including teachers colleges and junior colleges), both men and women, the control section falls in the 39th and the experimental in the 37th percentiles.

TABLE XIV

ACE HIGHS AND LOWS AND PERCENTILE RANK BY QUARTER

	XF	CF	XW	CW	XS	CS
ACE high	87	93	93	101	103	101
%-ile	88th	94th	94th	98th	98th	98th
ACE low	37	26	35	28	39	28
%-ile	4th		3rd		6th	

The highest ACE score was made in the spring experimental class---103; the lowest was the 26 in control fall class, which, with the CW 28 and CS 28, is lower than the first percentile in the Norms Bulletin. The experimental classes on the whole had a narrower range and lower mean than the control groups.

Table XV shows the means and adjusted means after analysis of covariance was run on six variables: ACT final score, ACT change in score, Spelling final score, Spelling change in score, Diction final score and Diction change in score. Inspection of the means table shows that both the experimental and control classes improved in work throughout the quarter. The rate of change in ACT is higher in XS and XF classes; in Spelling, in all control classes; in Diction, in all experimental classes. The very low pre-means for experimental spelling tend to indicate that rate of change for very poor spellers is slow. The scores represent the means for 80 items in ACT (grading scale R x 1), 100 in Spelling (R - W), and 50 items in Diction (R x 2).

The ACE score, used as the predictor or control variable for the analysis of covariance, was not employed horizontally as a predictor of individual achievement and rate of change. Erratic behavior in highs and lows favors further investigation of aptitude as a true predictor of improvement. A study with English 2600 (Reed, 1962) concluded that students with higher aptitude learned faster by programed method than students with

TABLE XV

MEANS AND ADJUSTED MEANS AFTER ANALYSIS OF COVARIANCE

	XF	CF	XW	CW	XS	CS	TOTAL X	TOTAL C
* Pre ACT Mean	45.80	47.72	45.62	46.86	51.00	52.84	47.59	48.63
Post ACT Raw Mean	51.92	53.00	51.62	54.86	58.36	58.71	54.10	55.27
Post ACT Adj. Mean	52.67	51.77	52.13	54.39	58.42	58.60	54.43	54.81
ACT Change Raw Mean	5.98	5.28	5.32	8.00	7.40	5.29	6.27	6.61
ACT Change Adj. Mean	5.92	5.39	5.19	8.12	7.40	5.29	6.24	6.65
* Pre Spell Mean	48.71	54.19	41.03	46.79	52.85	54.01	47.14	50.66
Post Spell Raw Mean	55.66	71.25	53.38	63.26	65.76	70.00	58.49	67.06
Post Spell Adj. Mean	56.71	69.52	53.87	62.81	65.80	69.90	58.85	66.56
Spell Change Raw Mean	7.58	17.06	11.91	16.19	13.60	15.21	11.09	16.20
Spell Change Adj. Mean	7.42	17.34	11.82	16.27	13.59	15.23	11.07	16.23
* Pre Diction Mean	71.00	72.44	73.00	73.12	75.97	77.19	73.32	74.05
Post Diction Raw Mean	78.15	79.31	77.55	76.07	82.24	82.50	79.40	78.50
Post Diction Adj. Mean	78.64	78.49	77.93	75.72	82.28	82.42	79.63	78.18
Diction Change Raw Mean	6.42	5.63	3.92	2.74	6.34	5.64	5.59	4.22
Diction Change Adj.Mean	6.39	5.66	3.97	2.69	6.34	5.65	5.59	4.21

* Pre Means are for total registration.

TABLE XVI

RAW MEANS BY QUARTERS FOR FIVE VARIABLES

	Experimental		Control		Experimental		Control		Experimental		Control	
	Female	Male	Female	Male	Jr/Sr/O	Fr/Soph	Jr/Sr/O	Fr/Soph	In-state	Out-of state	In-state	Out-of state
ACT Final Score	59.23	51.61	60.51	52.54	57.76	52.56	60.32	53.74	55.19	50.00	56.32	50.96
ACT Change	5.28	6.76	5.15	7.45	6.00	6.41	6.11	6.82	6.15	6.78	6.51	7.26
Spell Final	67.04	54.55	77.68	61.45	63.87	56.40	77.50	63.82	59.40	55.20	67.17	66.52
Spell Change	7.92	12.10	16.88	15.99	12.17	10.30	19.39	15.34	10.04	13.33	14.91	22.09
Diction Final	82.38	78.80	81.71	76.79	83.04	78.17	83.07	77.08	80.06	77.61	78.48	78.52
Diction Change	5.89	5.55	4.95	3.88	7.96	4.81	7.39	3.29	5.62	5.76	3.98	5.39

	Experimental			Control			Experimental		Control	
	Non Read	Ave. Read	Read	Non Read	Ave. Read	Read	E-Series Fail	E-Series Non-Fail	E-Series Fail	E-Series Non-Fail
ACT Final	52.79	53.91	56.28	55.07	54.85	58.73	49.91	55.91	53.76	56.39
ACT Change	4.93	7.10	6.94	6.86	5.95	10.09	6.82	6.05	8.68	5.19
Spell Final	57.98	57.85	60.53	65.81	66.61	74.36	49.52	62.68	62.04	70.67
Spell Change	11.10	11.08	19.59	16.74	16.30	14.55	9.51	11.42	17.96	15.09
Diction Final	79.57	78.48	81.75	77.19	78.88	81.09	77.11	80.62	75.60	80.58
Diction Change	6.00	5.49	5.38	4.00	4.24	5.27	5.25	5.84	3.88	4.52

TABLE XVII

F-TESTS FOR SIX CRITERIA - TOTAL EXPERIMENTAL-CONTROL

F TESTS	D.F.	Final ACT	ACT Change	Final Spell	Spell Change	Final Diction	Diction Change
FI Test for a Common Regression Line	1 277	0.14	0.03	2.04	1.30	0.17	2.20
FW Test that the Within Slope, BW, is Zero	1 278	179.52	1.98	44.90	0.42	102.73	0.10
FB Test of the Difference in Adjusted Means	1 278	0.15	0.17	13.19**	9.68**	2.65	2.45

** Significant at 1% * Significant at 5%

TABLE XVIII

F-TESTS FOR SIX CRITERIA BY QUARTER BY FIVE VARIABLES

		Final ACT			ACT Change			Final Spell			Spell Change		
	D.F.	CFXF	CWXW	CSXS	CFXF	CWXW	CSXS	CFXF	CWXW	CSXS	CFXF	CWXW	CSXS
FI	1 81	0.89	0.70	1.04	0.29	0.20	0.11	1.63	0.79	1.02	0.01	2.71	1.40
FW	1 82	0.53	3.75	0.02	43.87	55.70	57.05	26.40	10.21	7.35	1.14	0.53	0.53
FB	1 82	0.14	3.70	1.74	0.20	2.17	0.00	12.23**	6.68*	1.10	12.30**	2.61	0.26

		Final Diction			Diction Change		
	D.F.	CFXF	CWXW	CSXS	CFXF	CWXW	CSXS
FI	1 81	0.00	0.11	0.35	0.08	3.56	0.68
FW	1 82	34.20	31.30	28.16	0.06	0.59	0.06
FB	1 82	0.02	2.13	0.03	0.18	0.88.	0.16

** Significant at 1%

* Significant at 5%

low aptitude. No attempt has been made here to confirm the finding although it is indicated.

Means and standard deviations were run for each of six criteria (ACT-final and change; Spelling-final and change; Diction-final and change) by five variables: sex, residence, year in school, reading habits, and failure in an E-series class. These means (raw scores) are tabulated in Table XVI to indicate that within sections: 1) women tended to make higher scores than men; 2) instate scores tended to be higher than outstate; 3) readers were higher than average or nonreaders; 4) upperclass means were higher than lowerclass means; and 5) non-failures did better than failures. One interesting observation is that for ACT change, both experimental and control, means for failures are higher than for non-failures.

After analysis of covariance, nonsignificant results between sections for the year are shown for ACT and diction; for spelling significant results at the 1% level are shown in Table XVII. By quarters, as hypothesized earlier, fall quarter final scores and change scores were significant at both levels. Winter-quarter experimental scores were significant at the 5% level but not at 1%. The score for spring experimental made no appreciable change in total spelling means. Conditions under which the spelling unit was administered account in part for the variance. Further analysis was contraindicated.

Follow-up on E-series failures who passed E 8 fall and winter quarter was made to determine rate of progress in repeating the E-series course. Results show that

CF students averaged	C
CW	D
XF	C-
XW	C

Since the purpose of the E 8 class is to prepare students to do passing work in composition classes, students who had once failed were able to pass the course the second time after having had E 8; that the very weak XW class made a C is encouraging.

Since the juniors and seniors may use the scores made in E 8 as EPE determiners, the simple tabulation below is given:

CF	11 took EPE 11 passed	XF	17 took EPE 11 passed
CW	6 took 6 passed	XW	6 took 4 passed
CS	6 took 6 passed	CS	5 took 4 passed (one failure here is also one in XF)

Educational achievement at any level not only compounds measurement but defies analysis. The slow learner is not always facile in showing what he has learned. The fast learner may be weak in retention. Achievement in the E 8 classes used in this experiment proved, as in the past, a low mean rate of change in skill areas. Unlearning substandard language habits is a slow process. Few of the students--in either experimental or control sections--showed superior improvement in spelling or diction. Because writing is a continuous repertoire comprising thought and tools and techniques, results of a course in English Fundamentals may not be evident until later---after class or experimental conditions have ended. A check of rate of improvement in Table XV shows that students raised scores from only 2. 74 to 16. 19 points, on the average, in all areas.

In summary, the findings of the foregoing analyses are that programed instruction does perform an important function in the area of language skills but that more experimentation is indicated; that refinement of the programed units is desirable and that a more sensitive instrument for measuring outcome is essential.

CHAPTER VIII

CONCLUSIONS AND IMPLICATIONS

To be disinterested in the results of a research project, the very motivation for which was a personal interest in a local situation, requires restraint. In the light of the findings in the last chapter, however, valid conclusions may be drawn with respect to the research undertaken as Project S-192. The objectives and hypotheses stated in Chapter III have been attained or tested to the extent that there are implications relative to the use of programed materials in education.

All developmental objectives (See p. 14.) were attained as explained in Chapter V. The three units---Spelling, Diction, and Sentence-to-Paragraph---were programed after terminal behavior, organization of subject matter and step-size for frames had been established, despite the pressure of time for implementation in the second phase of the project. Any conclusion to be drawn here is that the project should have extended over a two-year period with the developmental phase separate from the demonstrational, which was dependent upon the first. It may also be concluded that bit-size for programed frames at the university level may be somewhat larger in reteaching a native language than in presenting new subject matter.

All developmental objectives (See p. 15) were attained. Conclusions to be drawn here are that control sections showed a higher verbal aptitude and made not only higher mean final scores in spelling but higher mean change in score in spelling, after adjustment was made for difference in the control variable. Conditions should have been more equable; developed units should have been distributed to all students at the same intervals each quarter. Conclusions are that students can work with programed text outside the classroom but that the educational measurement used to rate their achievement should be more sensitive.

An hypothesis is developed from recognition of a need for change. The current research was motivated by desire on the part of the project director to provide auto-instructional subject matter for three types of students enrolled in English Fundamentals at Colorado State University. It was implicit that self-paced programed texts in the hands of the students, if such texts could satisfy the heterogeneity of the class composition, could lead to eventual elimination of the course from the curriculum.

The hypotheses formulated for the project were confirmed. (See p. 16) The first hypothesis was confirmed with respect to two areas of the subject matter prepared: Use of programed units in diction and sentence arrangement and coherence in the paragraph proved as effective as prepared class assignments for individual study or rote memory. Use of a programed unit in spelling was not effective for two quarters and the yearly total but effective spring quarter when demonstrational conditions were satisfactory. The conclusion can be drawn that programed materials for the subject matters developed are an educational aid and can be used as effectively as other methods when students are not working under imposed time or class limitations or adverse conditions.

General conclusions to be drawn as a result of the experimentation may be summarized as follows:

Between groups: The experimental group used programed material with results comparable to control group except in spelling. The control group tended to show somewhat higher averages working within rote memory range and tested by an instrument which did not account for the wider range of subject matter in the programed spelling unit.

Between quarters: Fall attitude showed a significant drop in both experimental and control groups. Experimental groups showed a significant drop in attitude over control groups during winter and spring quarter. Spring quarter students using experimental units showed greater achievement than fall or winter experimental subjects. Control subjects showed more stable results.

On the whole:

1. Motivation is more important than method.
2. Erratic behavior on pre and post tests influences total achievement pattern.
3. Rate of change is lower for low verbal aptitude.
4. Recent failure serves as a strong stimulus.
5. Attitude is not a necessary predictor for achievement.

Implications of the study are that revision of the programed units, further experimentation under more controlled conditions, expansion of the units into one coherent text, and formulation of a more comprehensive educational instrument can lead to improved competencies in English Fundamentals at Colorado State University and provide self-help at the adult level.

The second hypothesis was confirmed. The project director and her graduate assistant conducted all classes---for a total of six instructional staff positions for the year. With a total of 320 students enrolled and a final 294 completing the experiment, there was a saving of from four to six instructors for the year. For 300 students and a normal class load of 30, ten instructors would be required. For 300 students at the recommended AAUP load of 25, twelve instructors would be required. Economy in class time was also effected. Two classes each quarter for a total of six classes for the year replaced the usual class provision of at least three sections per quarter for a total of nine classes. Fall quarter would have required three classes; winter quarter, four; and spring quarter, at least three for a total of 10 class periods. A saving of four class periods was effected.

A perhaps irrelevant conclusion to be drawn is that programing subject matter for a class affords constant reinforcement for the instructor and demonstrating such units not only highlights student weaknesses but accentuates certain areas for intensive subject-matter concentration.

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APPENDICES

Form A

____
Identification

ATTITUDE SCALE

This scale has been prepared so that you can indicate how you feel about this class. PLEASE RESPOND TO EVERY ITEM. In each case, draw a circle around the letter which represents your own reaction as follows:

SA	if you strongly agree with the statement
A	if you agree but not strongly so
N	if you are neutral or undecided
D	if you disagree but not strongly so
SD	if you strongly disagree with the statement

Remember, the only correct answer is the one which actually represents how you feel about this class.

1. I am satisfied with the methods used in teaching this class.......... SA A N D SD
2. My attitude toward this class is less favorable than it was.......... SA A N D SD
3. There is not enough contact between teacher and students in this class.......... SA A N D SD
4. I like the method used in teaching this class.......... SA A N D SD
5. Too much emphasis has been placed on topics that are unimportant.......... SA A N D SD
6. I can see no advantage of this method of teaching over other methods. SA A N D SD
7. This class exceeds my highest expectation.......... SA A N D SD
8. Some students benefit more than others from the method of teaching this class.......... SA A N D SD
9. I have neutral feelings toward the subject matter of this class.......... SA A N D SD
10. The presentation of this class is paced too fast.......... SA A N D SD
11. I am pleased with the teaching method used for this class.......... SA A N D SD
12. I am disappointed with this class.......... SA A N D SD
13. I find it easy to study this subject because I am really enthusiastic about it.......... SA A N D SD
14. I am forced by the method in this class to spend too much time on material I already know.......... SA A N D SD
15. Teachers of all classes should employ the method used to teach this class.......... SA A N D SD
16. Students do not participate enough in this class.......... SA A N D SD
17. The method used to teach this class delays our progress through the material.......... SA A N D SD
18. I remember the material in this class because of the method used to present it.......... SA A N D SD
19. I did not think I would learn as much in this class as I have.......... SA A N D SD
20. The teaching method used in this class doesn't give me enough freedom.......... SA A N D SD
21. My attitude about the way this class is taught is one of enthusiasm.......... SA A N D SD
22. The method of instruction used in this class could be improved greatly.......... SA A N D SD
23. The topics presented in this class are well organized.......... SA A N D SD
24. This class has not fulfilled the hopes I had for it.......... SA A N D SD
25. I have not had a chance to review when I wanted to in this class.......... SA A N D SD
26. The subject matter of this class is interesting.......... SA A N D SD

Form C

____
Identification

ATTITUDE SCALE

This scale has been prepared so that you can indicate how you feel about this class. PLEASE RESPOND TO EVERY ITEM. In each case, draw a circle around the letter which represents your own reaction as follows:

SA if you strongly agree with the statement
A if you agree but not strongly so
N if you are neutral or undecided
D if you disagree but not strongly so
SD if you strongly disagree with the statement

Remember, the only correct answer is the one which actually represents how you feel about this class.

1. My attitude about the methods used in teaching this course can be described as "satisfactory" SA A N D SD
2. I feel less favorable toward this class than I did. SA A N D SD
3. Increasing the contact between teacher and students would improve this class. . . . . . . SA A N D SD
4. I like the way this class is taught. . . . . SA A N D SD
5. The unimportant topics in this class have been given too much time . . . . SA A N D SD
6. I cannot see any advantage for this method of teaching over any other methods . . . . . . SA A N D SD
7. My highest expectations have been exceeded in this class . . . . SA A N D SD
8. The method of teaching this class works well for some students but not for others . . . . . SA A N D SD
9. I neither like nor dislike the subject matter of this class. . . . . SA A N D SD
10. The rate of presenting material in this class is too fast. . . . . SA A N D SD
11. I am happy that the method of teaching this class was used . . . . SA A N D SD
12. My feeling about this class is one of disappointment. . . . . SA A N D SD
13. This class gives me real enthusiasm for the study of this subject. . . . . SA A N D SD
14. I already know the material in this class yet the method of instruction forces me to spend time on it . . . . SA A N D SD
15. All other classes should be taught by the same method used in this class. . . . . SA A N D SD
16. There is not as much student participation in this class as there should be. . . . . SA A N D SD
17. The progress of the class is delayed because of the teaching method used . . . . SA A N D SD
18. Because of the method used in this class the material stays with me . . . . SA A N D SD
19. I have learned more in this class than I expected to learn. . . . . SA A N D SD

20. As far as freedom is concerned, the method of instruction in this class doesn't give me enough . . . . SA A N D SD
21. The teaching method in this class gives me a feeling of enthusiasm. . . . . SA A N D SD
22. The method of instruction used in this class needs a lot of improvement . . . . SA A N D SD
23. There is good organization of subject matter in this class. . . . . SA A N D SD
24. This class is not as good as I hoped it would be . . . . SA A N D SD
25. In this class I have not had a chance to go back over the material . . . . SA A N D SD
26. I am interested in the content of this class . . SA A N D SD

E 8 Control

SPELLBOUND

Spellbinders:

1. Learn to LOOK at WORDS; spell what you SEE.

2. Make a list of YOUR OWN spelling errors, correcting each error until you have mastered the word.

3. Invent helpful associations of idea or pronunciation.
   (seize=see-ize)
   (occasion--as)
   (stationery--letter)
   (stationary--stable)

4. Learn spelling rules (spellogisms).

5. Learn important exceptions

   (Exceptions are words which, with little difficulty, CAN BE MEMORIZED!)

Spellogisms:

1. Words ending in silent e
   . . RETAIN e when suffix begins with a consonant. (sameness, shapely)
   . . DROP e when ending begins with vowel (paving, writing, forcible)
2. Words ending in a consonant preceded by a single vowel
   . . DOUBLE the final consonant, if the accent is on the last syllable, when suffix begins with a vowel or y
   . . DO NOT DOUBLE the final consonant before a suffix beginning with a vowel if the accent is on any syllable but the last or if the word ends in more than one consonant. RETAIN a double consonant before all terminations.
3. Words with ie - ei are spelled i before e except after c's when sound is long e, e before i when sound is long a.
4. Words ending in c add a k before a termination beginning with e, i or y (picnicking)
5. Words ending in y
   . . CHANGE y to i before any termination except one beginning with i, if y is preceded by consonant.
   . . RETAIN y unchanged before any termination if y is preceded by consonant.
6. Words ending in o are tricky, (potatoes, tomatoes, radios, rodeos)
7. Words ending in i usually add s to form plural.
8. Nouns ending in f, or ff--add s to form plural.
   . . in lf or fe--usually ves
9. Letters, signs, symbols and abbreviations, form plurals by 's or s. (8's, whys or why's).
10. Proper names ending in y add s to form plural.

SPELLING LIST E 8

E 8 Control

ab__en__e
abs__rd
ac__ident__ __ly
ac__om__ __date
ac__ompany
ac__ __m__late
ac__u__tom
ach__ __v__ment
ac__ing
a__knowl__ __g__ent

ac__u__ __nted
a__qu__re
a__ros__
ag__ __n
al__ot__ed
a__ __right
a__ways
am__t__ur
am__ng
am__ __nt

an__l__sis
an__l__ze
a__oint
a__ __u__l
anx__ __ty
__ny
ap__logy
ap__ __r__tus
ap__a__ent
ap__ropr__ __te

arg__m__nt
arg__ __ng
aro__nd
art__ __le
a__ __end (group)
as__ist__nt
at__l__te
a__d__ence
a__th__r
bank__up__cy

basic__ __ly
bec__m__ng
bef__ __e
bel__ __f
bel__ __ve
b__n__fic__ __l
ben__fit__d
boun__ __ries
br__ __ght
b__ __lt

b__r__au
bus__nes__
b__sy
c__l__nd__r
cat__g__ry
c__m__t__ry
c__rt__ __n
chang__able
cho__se (present)
clo__ __es

co__ __ng
com__is__ion
com__it__e__
comp__r__tiv__ly
compl__ment compl__ment
con__ede
confer__ed
con__cl__nt__ous
con__ __ious
cont__n__ous

cont__ __vers__ __l
cr__ __lty
con__ __l
couns__l (c__l)
dec__de
d__c__sion
def__nd__nt
defi__e
def__n__t__l__
d__f__n__t__on

dep__nd__nt
de__ __h (depth)
desc__nd__nt
d__sc__nd__nt
d__s__r__be
d__sc__ __ption
des__rt
de__ __ __rt
d__sp__r__te
d__s__dv__ntage

d__s__gree
dis__st__ous
di__ __ipl__ne
di__ing
d__ll__r
d__ing (die)
ec__t__ __y
ef__ect
eig__t__
el__m__nt__ry

el__m__n__te
emb__r__ __s__
em__n__nt
enc__ __rag__ng
en__m__
env__r__ __ment
equi__ __ed
e__ __
ex__g__erate
exc__ __d

ex__st__nce
ex__st__nt
exp__n__e
exp__r__ __nce
expl__n__tion
fam__l__ __r
fas__in__te
fin__ __ly
for__ __gn
forf__ __t

f__rth
f__ __rth
form__lly
form__rly
fr__ __nd
g__ __ge (measure)
g__ne__logy
gove__n__r
gr__m__ __r
grand__ __r

g__ __rd (protect)
g__ __ss (opinion)
gu__ __t
ha__f
hav__n__t
h__ __g__t
hav__ng
il__ __gible
im__igration
i__ __inent

ind__p__nd__nce
inf__n__te
int__l__ __gence
int__r__st
it__ (poss.)
it__s
it__ __lf
jud__ __ent
lab__ __ __tory
l__d (verb-past)

l__ __s__re
lit__ __al
log__c__ __ly
lon__ __y
lo__e
l__ __se
l__sing
l__ing (lie)
ma__ __l__ge
m__ny
mem__r__ble
m__re
min__t__s
mis__pel__ed
moment__ __s

ne__e__sary
nick__ __
n__ne
notic__able
occ__s__on
occ__ __ion__lly
oc__ur__ed
occu__ __ence
occ__r__ing
on__self
op__r__te
op__n__ __n
op__ __rt__nity
opt__m__stic
org__n__ze
ourse__ __es
over__un
p__ __d (past of pay)
pamp__ __et
par__l__ __l
part__c__l__r
past__me
p__ __form (act)
p__ __form__nce
per__aps
perm__s__ __ble
person__l (adj.)
perso__ __el (noun)
Ph__l__p__ines
ph__sical
p__ __m (verse)
p__s__e__ __ion
pos__ __ble
pract__c__l
pr__c__de
pr__f__r__nce
pr__j__dice
pr__p__re

pr__v__l__nt
pr__b__bly
princ__p__l (chief)
princ__p__e (law)
pr__v__l__ge
proc__d__re
pro__ __ __d
profe__ __ion
pro__es__or
pr__m__n__nt
pr__ __f
pr__v__
pr__v__ng
p__rs__e
qu__n__ity

qui__t (still)
qui__e (very)
quit__ing
qui__zes
r__ __dy
re__l__y
rec__ __ve
rec__ __v__ng
r__com__end
ref__r__nce
refer__ing
rep__t__tion
res__rv__ __r
rest__ __r__nt
r__et__r__c
r__ __thm
saf__ty
sc__ __d__le
s__i__nce
secr__t__ry
s__ __ze
s__nse
s__nce
s__p__r__te
sep__r__tion
s__v__r__ly
sh__n__ng
s__o__ld
s__ __ge
s__m__l__r
sinc__r__ly
s__me (pro.)
s__ph__m__re
spec__m__n
stop__ed
stud__ __ng
suc__e__d
su__ __e__ __ion

superint__nd__nt
super__ede
su__ __ose
sup__ly
su__pr__ __e
station__ry (stable)
station__ry (letter)
t__ __ring (ripping)
tec__niq__e
temp__r__ment
temp__r__ture
tend__ncy
th__n (conj.)
th__n (adv.)
th__er are th__ __r books
they__re
th__ref__re
th__r__ __gh (full)
t__ __
t__ __
t__
tog__ther
transfe__ __ed
tr__ __s__rer
tr__ __ble
t__ran__y
undou__tedly
ungram__atical
un__ver__ __l
un__vers__ty
u__ne__e__sary
uns__p__ __sticate
unt__l
us__ng
vac__n__y
val__ __ble
ve__y
vill__ge
vill__ __n
w__ __ther (atmosphere)
w__ __ght
w__ __rd (strange)
wh__re (adv.)
w__ether (conj.)
w__ __ld (to handle)
w__m__n (sing.)
wr__t__ (inf.)
wr__ __ing
wh__se who__s
y__ __ld
y__ __r
you__ __e
y__ __rse__ __es

E 8 Control

NAME________________________________ EXTRA UNIT: SPELLING QUIZZES

Column I. Date________________________________

a. Fill in the blanks:

ab__en__e acc__ __ __ __date ach__ __v__ment amat__ __r

argu__ __ng ath__ __te bec__ __ing benefi__ed ar__und ap__l__gy

b. Indicate as correct (C) or rewrite misspelling; use blank line above word.

abserd accustom acheing allotted alright anoint apparatus

amoung audience beleive accidently any boundaries ascend

artical

Colunm II. Date________________________________

a. Fill in the blanks:

cate__gory co__ __i__ __ion def__nd__nt def__n__te desp__r__te

dep__nd__nt di__ __ing (to dine) __effect (result) d__ing (to die)

el__m__nt__ry

b. Indicate as correct (C) or rewrite misspelling; use blank line above word.

buisness calender cemetery coming conscious councel dissagree

eighth discription escatsy eleminate changeable crulety

confered dicsipline

Column III. Date________________________________

a. Fill in the blanks:

amb__ __r__s__ env__r__ __ment equip__ed exist__nce fr__ __nd

exp__r__ __nce gram__ __r pr__c__d__ inf__n__te int__r__st

b. Indicate as correct(C) or rewrite misspelling; use blank line above word.

ect. exaggerate exceed expense explaination familair finaly

guage governer guilt haven't iminent judgment laboratory

lead (past tense of "to lead")

NAME______________________________ EXTRA UNIT: SPELLING QUIZZES 2

Column IV. Date____________________________

a. Fill in the blanks:

marr__ __ge min__t__s mis__pelled nick__ __ notic__ __ble

occ__ __rence opt__m__stic pam__ __let permis__ __ble pre__ __de

b. Indicate as correct (C) or rewrite misspelling; use blank line above word.

lonley lose (not tight) loose (opposite of found) lieing many

occasion payed onesself opinion operate paralell personel

practicle predjudice preference

Column V. Date______________________________

a. Fill in the blanks:

pr__v__l__nt pr__c__dure pr__c__ __d pr__ __ve rec__ __ve

rec__ __m__nd res__ __rant r__et__ric s__p__r__te stud__ __ng

b. Indicate as correct (C) or rewrite misspelling; use blank line above word.

probably principal (adj.) proffesor persue quantity ready

referrence saftey schedual seize shining similar sophmore

speciman stopped

Column VI. Date______________________________

a. Fill in the blanks:

s__per__nt__nd__nt super__ede su__ri__e tend__ncy tog__ther

y__ __ld un__ec__ __s__ry vill__ge vill__ __n w__ __rd

b. Indicate as correct (C) or rewrite misspelling; use blank line above word.

stationery (stable) temprament to (adverb) ungrammatical untill

verry useing tyranny whether writting universal transferred

weight youre where

SCORES I__________ IV__________
II__________ V__________
III__________ VI__________

E 8 Control

Diction

A, an. Use *a* before a consonant sound, *an* before a vowel sound.

Accept, except. *Accept* means "to take" or "to receive." *Except*, a verb, means "to exclude."

Affect, effect. *Affect* (a verb) means "to influence" or "to change." *Effect*, "result."

Aggravated. *Aggravate* means "to make worse," not "to annoy."

Agree. One agrees *to* a plan but *with* a person.

Ain't. Substandard. Use *am not*, *are not*, *is not*.

All ready, already. We are *all ready* for the game. He had *already* left.

Allude, refer. *Allude* means "to refer to indirectly." *Refer* means "to mention something specifically."

Alumnus, alumna. Masculine singular--*alumnus* Feminine singular--*alumna*
Masculine plural--*alumni* Feminine plural--*alumnae*
Alumni is used for mixed groups.

A.M., P.M. Use only with figures.

Among, between. *Among* several. *Between* two.

Amount, number. Use *amount* to refer to bulk or mass, *number* to countable objects.

And etc. Redundant. *Etc.* means "and other things."

Anywhere, nowhere, everywhere. Correct. Do not use *anyplace*, *noplace*, *everyplace*. Adverbs!!!

As. Avoid in the sense of "because" or "that."

Awhile, a while. *Awhile* is an adverb. *A while* is a noun preceded by an article.

Balance. Do not use for "rest" or "remainder."

Beside, besides. *Beside* is a preposition, "by the side of." *Besides*, adverb, means "in addition to."

But what. do not use for "that" or "but that."

Can, may. *Can* denotes ability; *may* denotes possibility or permission.

Compare to, compare with. Compare "with" when set side by side. Compare"to" in representation.

Complected. Wrong for *complexioned*.

Coarse, course. *Coarse*, adjective. *Course*, noun.

Corps, corpse. A *corpse* is a dead body.

Could of. Substandard corruption of "could have."

Credible (believable) creditable (praiseworthy) credulous (gullible).

Data, strata, phenomena. Plurals of datum, stratum, phenomenon.

Differ from, differ with. *Differ from* means "stand apart, being unlike." *Differ with* means "to disagree."

Disinterested, uninterested. A judge should be *disinterested* (impartial).

Done. Use *did* for past tense, third person singular of "to do."

Emigrate (out) Immigrate (in).

Enthus. Not a verb. Use the adjective "enthusiastic."

Farther, further. *Farther*--distance; *further*--advance in degree, quality or abstraction.

Formerly, formally. *Formerly* means "previously." *Formally* means "not informally."

Get. Avoid too frequent use. Expand your vocabulary.

Good. Not an adverb. John is doing *well* (not *good*) in chemistry.

Had of, had ought. Say *had* (omit the *of*). Say *ought* (omit the *had*).

Human. An adjective. Say *human being*.

If, whether. Avoid *if* in noun classes.

Incredible, incredulous. (unbelievable) (skeptical).

Imply, infer. The writer or speaker *implies*; the reader or listener *infers*.

Lie, lay. (see sit, set.)

Like. Still a preposition (not a conjunction) despite Winston cigarettes.

Luxuriant, luxurious. Grass is *luxuriant*. Dress or decor may be *luxurious*.

Mad, angry. *Mad* (mentally unbalanced). *Angry* (temporarily insensed).

Most. Not the adverb *almost*. It is correct as an adverb to form superlative.

Myself, himself, yourself. REFLEXIVE pronouns, not substitutes for *I* or *me*, etc.

Nowhere near. Use *not nearly*.

Notorious, notable. Jesse James was *notorious*. Lincoln was *notable*.

Off of, in back of. Omit *of* in the first. Say *off*. Say *behind the* house, not *in back of*.

Ought to of. See *could of*.

Out loud. Say *aloud*.

Over with. Omit *with*.

Past time (time in the past). Pastime (a sport or other amusement).

Per. Use with Latin words, *per diem*.

Practical means "useful, sensible." Practicable means "capable of being put into practice."

Principal, principle. *Principal* means "the first or highest in rank" or "a capital sum"; the *principal* of the high school; the *principal* cause; the *principal* and the interest. *Principle* means "rule": a moral *principle*; a *principle* in physics (Relate pal=chief).

Proceed, precede. *Proceed* means "to go ahead." *Precede* means "to go before."

Raise, rear. *Raise* animals; *rear* children.

Reason is because. *Reason is that* is preferred.

Reason why. Omit *why*.

Respectfully, respectively. *Respectfully* means "in a manner showing respect." *Respectively* means "each in the order given."

Sit, set. *Sit*, like *lie* and *rise* are intransitive verbs. *Set*, *lay*, and *raise* are transitive.

Some, somewhat. *Some* is an adjective or a pronoun; *somewhat* is an adverb.

Somewheres. Use somewhere.

Sort of. Avoid for rather. Correct if you mean "a sort (or kind) of material."
Sure, surely. Sure is an adjective; surely is an adverb.
Suspicioned, suspected. Suspicion is a noun. Suspect is a verb.
That there, this here. Use that or this.
These kind; these sort. These is plural. Use this kind or this sort.
To, too, two. There were TWO TOO many TO go TO town.
Try and. Avoid. Use try to.
Wait on, wait for. Wait on means "to attend" or "to serve." Wait for friends.
Want in, want out. Use want to come in, want to go out.
Who, which, that. Who for persons, which for animals, or things, and that for persons, animals, or things. People are never "which"es.
Would have. Incorrect for "had."
You was. Substandard for you were.

Listed above are the most common errors in usage. Refer to your dictionary and to Harbrace Handbook, Section 9. Learn to correct your own errors in diction. Add to this list as you become aware of correct terminology or distinctions in words which are spelled alike or which sound alike.

Paragraphs written at the beginning and at the end of fall quarter by a 21-year-old male chemistry major (senior) in the control class:

1) My college carear has had many pit falls but the greatest has been my lack of knowledge or lack of enthusiasm in regard to English. The graids that I obtained from my English courses are as follows:

E-2--D
E-3--B
E-4--C

These grades are not consistant with my school average of 3.2+ for the past three years. I have also failed the english profeciency test twice.

I reallize that although english is not my major this field will be even more important than my major since I am so lacking.

I hope to be able to get a high mark in the profeciency exam and to be able to express myself clearly in the future.

2) This class has given me a chance to become aware of the special fields of English grammar in which I am most lacking; it has helped me to become more aware of my own personal faults. Through E-8 I have learned methods which I can use to better my personal English after I graduate. I hope to review small sections of English 3200 because I feel that this text gives very good information in a mimimum of time. I am making a personal spelling list, composed of the words I most often misspell. My attitude concerning English has improved, because I realize that exercises will never make my English acceptable, but it has shown me the way to improve it in the future. I would like to take more English classes; unfortunately, I will be graduating and do not have time. Further improvement is up to me.

Paragraphs written at the beginning and at the end of spring quarter by a student who had failed the E-8 experimental class winter quarter, a 20-year-old freshman in Industrial Construction Management:

1) This quater I plan the pass E-8 and with the knowledge gained complete the rest of my required english coarses. Last quater I failed E-8 and the quater before I failed E-2. With out a general uuderstanding of english and its applied uses I cannot pass the othere class of english. Also with E-i I should be able to pass the professency test in a couple of years.

2) Although studying English fundamentals in E-8 is no panacea, applying the rules learned in E-8 can be of great help to college students. With the use of the proper tools, a student will find his writtent work of a much better quality than before entering the E-8 English course. Even though the student's writing is grammically correct, he may not be able to express his thoughts to his readers in a clear and forceful manner. By making the best use of the materials learned in E-8 a student can shock the world with his presentation of ideas. Not only is a person's writing judged by professors and teachers at the university but by the people which he must correspond with in later life. If a person fails to express his thoughts and ideas in a manner which shows his maximum ability, he may lose a higher paying job or a permotion on his present job. The English language can only help the person who wants to make the most of what he has learned

The following units prepared for this experiment are available upon request:

1. Spelling Unit
2. Diction Unit
3. Sentence to Paragraph Unit

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